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ALTERNATIVE INSTITUTIONAL AND FINANCIAL ARRANGEMENTS FOR AREAWIDE WASTE TREATMENT MANAGEMENT

HARVEY O. BANKS, INCORPORATED

PREPARED FOR
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PREFACE

Section 208 of the Federal Water Quality Control Act Amendments of 1972 (Public Law 92-500), Appendix A, mandates a regional or areawide approach to waste treatment management in areas with substantial water quality control problems. The areawide plans to be developed including requirements for both point and nonpoint sources of pollutants, and the emphasis on their implementation, establishes Section 208 as one of the more important avenues to improved water quality provided by the Act. Adequate legal authority and financial capability at the state and local levels of government to implement areawide plans is critical to realizing the objectives of Section 208. Where alternatives exist, Section 208 requires that institutional and financial structures for management be carefully selected and combined to achieve stipulated objectives.

This report describes results of a study authorized by EPA to identify and describe some of the considerations inherent in selecting institutional and financial arrangements that might be employed in implementing areawide waste treatment management plans. The study, titled Alternative Institutional and Financial Arrangements for Areawide Waste Treatment Management (Contract No. 68-01-2909), was begun on June 25, 1974.

Field surveys were conducted in three areas as a part of the study: Raleigh-Durham, North Carolina; Youngstown-Warren, Ohio; and the Southern Maine area. These areas were designated by the EPA Project Officer. Staff members of federal, state and local agencies in each area providing special assistance regarding the local situation included the following:

Raleigh-Durham, North Carolina

Pearson Stewart, Executive Director, Triangle J Council of Governments; Research Triangle Park, North Carolina

James Mshar; Project Director, Triangle J Council of Governments; Research Triangle Park, North Carolina

A.F. McRorie; Assistant Chief, North Carolina Department of Natural and Economic Resources; Raleigh, North Carolina.

Scott Burdine; Program Advisor, Region IV, U.S. Environmental Protection Agency; Atlanta, Georgia

Youngstown-Warren, Ohio

William Fergus; Director, Eastgate Development and Transportation Authority; Youngstown, Ohio

Douglas Williams; Assistant Chief of Planning Division, Water Section, Ohio Environmental Protection Agency; Columbus, Ohio

William Cloe; Chief, Planning Grants Section, Region V, U.S. Environmental Protection Agency; Chicago, Illinois

Michael MacMullen; Unit Coordinator, Michigan-Ohio Unit Planning Branch, Region V, U.S. Environmental Protection Agency; Chicago, Illinois

Southern Maine

Brian Chernack; Executive Planning Director, Southern Maine Regional Planning Commission; Alfred, Maine

John McGrail; Assistant Engineer, Bureau of Water Quality Control, Maine Department of Environmental Protection; Augusta, Maine

Larry MacMillan; Environmental Protection Specialist, Water Quality Control Branch, Region I, U.S. Environmental Protection Agency; Boston, Massachusetts

Peter Gowen; General Physical Scientist, Water Quality Control Branch, Region I, U.S. Environmental Protection Agency; Boston, Massachusetts

The assistance given by these individuals and numerous others is greatly appreciated.

Mr. Theodore Johnson, Project Officer for the U.S. Environmental Protection Agency, provided constructive comment and guidance throughout the project. His diligent efforts to meet informational needs and to facilitate the project's progress were extremely helpful.

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CHAPTER I

INTRODUCTION

CHAPTER I

INTRODUCTION

Inefficiency in managing wastes in metropolitan regions has, in part, resulted from lack of coordination among waste producers and waste managers. Communities and industries have had no mandate to jointly consider the development and use of land resources or the handling of produced wastes. Little motivation could be generated for making the substantial investments required for treatment works and other facilities when uncontrolled wastes of others would still result in polluted waters.

This lack of a coordinated attack on water quality control has resulted in a proliferation of waste treatment facilities under various and sometimes ineffective management arrangements. Economies of scale in structural works and coherent control of nonpoint sources of pollutants through regional management have not usually been realized.

The Federal Water Pollution Control Act Amendments of 1972 specifically addressed the need for a regional approach. In the declaration of goals, Sec. 101 of the Act states:

> *..it is the national policy that areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each state..*

A specific program to encourage and facilitate development and implementation of areawide waste treatment management plans is set forth in Sec. 208 of the Act. Section 208 provides for identifying and delineating the areas having substantial water quality control problems where such plans are to be prepared and designating the responsible planning organization; describes the minimum contents of plans to be prepared; and requires designation of the agencies to be responsible for implementation of the completed plans. Areawide planning pursuant to Sec. 208 must consider water quality control in broader terms than has been common heretofore. Attention must be given to the impact of pollutants from solid, gaseous and thermal wastes, storm water runoff, agriculture, silviculture, construction activities, and salt water intrusion, as well as from municipal and industrial wastes.

The Act recognizes that not all sources of pollution can be effectively controlled with present technology. It also implictly recognizes that sufficient authorities may not now exist in all areas to carry out the regulatory programs needed. Sec. 208 requires that approved areawide plans identify needed treatment works and establish priorities for their construction; establish regulatory programs; include processes to identify and set forth methods and procedures for control of certain nonpoint sources of pollution; and identify measures necessary to carry out the plan. Areawide plans must include an identification of the institutional and financial arrangements to be used in implementing the approved plan. This latter point is particularly important. Sec. 208 is specifically oriented toward planning for management of areawide waste treatment, not just toward identification of needed facilities and regulatory programs.

The inclusion of nonpoint sources control as an objective introduces into the planning process new complexities associated with identifying offending practices or conditions and establishing institutional and financial measures for control. Implementation of areawide plans will require overcoming jurisdictional and other problems, including allocating non-federal costs in a manner consistent with the Act.

Since passage of the Act on October 18, 1972, rules and regulations needed to initiate areawide planning have been issued by EPA. A number of areas have now been identified, which, due to urban-industrial concentrations or other factors, have substantial water quality control problems best corrected through an areawide approach. The first areawide plans for waste treatment management developed pursuant to Sec. 208 are scheduled to be completed in mid-1976. The resulting plans may differ substantially due to the particular types of water quality problems addressed and in the scope and detail of their consideration of any specific factor. Notwithstanding the present lack of detailed knowledge of plan contents, it is apparent that the institutional and financial aspects of plan implementation will be difficult to treat and will require extensive consideration by the designated planning organizations, the concerned state agencies, and EPA.

PURPOSE AND SCOPE

This study was undertaken to collect and make available basic information on alternative institutional and financial approaches to implementation of areawide waste treatment management plans and to recommend actions which might be taken by the U.S. Environmental Protection Agency to assist local and state officials responsible for preparation and implementation of areawide plans.

The study was to conduct the following:

- Thorough review of the relevant literature.
- Three case studies of areas designated for and engaged in waste treatment management planning under Section 208 of the FWPCA Amendments of 1972. The areas selected for study shall represent a range of possibilities in terms of population, geographic location, character of water quality problem (s), and experience in cooperative water quality management. For each case, an analysis shall be conducted based on in-depth, on-site investigations and interviews with appropriate state and local officials. The analysis shall incorporate the following:
    - (a) A survey of existing institutional and financial arrangements for waste treatment management and an explanation of the deficiencies and needs of these arrangements with respect to the requirements of Section 208.
    - (b) A description of the approaches contemplated, proposed, or undertaken by the area's 208 planning agency in regard to the problems discussed under Purpose, above.
    - (c) A thorough evaluation of these approaches in light of the intentions and requirements of Section 208 and the experience and potential of the area.
    - (d) Carefully explained and documented suggestions for alternative approaches.

- A comparative analysis of the several areas which points out similarities and differences (and the reasons therefor) in background, potential, and approach.

- Recommendations to EPA, including an assessment of the potential for applying the approaches described and suggested for the areas of study to other 208 areas.

METHOD OF APPROACH

The investigation was approached through related tasks including:

- Review of the relevant literature

- Conduct of case study investigations

- Comparative analysis of case study findings

- Preparation of recommendations

Examination of the general literature was completed prior to beginning the case studies. Later in the project, literature review was resumed to identify and examine available materials pertaining to specific points raised during the central part of the study. A bibliography resulting from the literature review is included in this report as Appendix B. The bibliography is categorized to facilitate reference.

The case study areas to be investigated were selected by the Project Officer following consultation with the appropriate Regional Office of the EPA and designated areawide planning organizations. The case study areas selected provide a range in water quality problems to be solved, existing institutional framework, geographic location, and character of the planning area. Areas selected were Raleigh-Durham, North Carolina; Youngstown-Warren, Ohio; and Southern Maine.

Preparation for each of the case studies included review of available information concerning the designated planning area and organization. This information varied for each case study area but generally included correspondence, memorandums and other materials pertaining to designation of the planning organization and its application to EPA for a planning grant pursuant to Sec. 208(f).

Each case study area was visited for detailed discussion with the staff members of federal, state and local agencies participating or expected to participate in development of the areawide plan. During each visit, useful documents were collected or requested.

Following each case study visit, a synopsis was prepared and submitted for review by the staff of the designated planning organization to assure accuracy. Descriptions of the case study areas in Chapter 4 are largely based on these verified assessments of the situation and documents assembled prior to and during the on-site investigations.

Information collected during the case study investigations was used to:

- identify the alternative institutional and financial approaches to implementation contemplated, proposed or being initiated in each of the areas studied;
- ascertain significant differences or similarities accounting for variations in the approaches identified and affecting the transferability of concepts to other planning areas;
- assess the relative strengths or merits of the approaches identified; and
- determine weaknesses or deficiencies in the approaches identified as one of the bases for the formulation of recommendations.

Based upon information gained from review of the literature, conduct of the case studies, comparison of the findings, and the experience of the investigators in water quality control, recommendations were prepared to the designated planning organization in each of the case study areas and to the EPA. In addition, some recommendations were prepared which are thought generally applicable to all organizations undertaking preparation of an areawide waste treatment management plan.

CHAPTER 2

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations presented in this Chapter are based on information collected during review of the relevant literature, discussions with staff and officials of organizations participating in development of the areawide waste treatment management plans for the case study areas, examination of available documents pertaining to each of the case studies, and the experience of the investigators in other planning situations. The areawide planning process was in its earliest stages in each of the case study areas at the time of investigation and little effort had as yet been devoted to the institutional and financial aspects of plan implementation. The contractor has, therefore, drawn extensively on other sources of relevant data and information.

The attention drawn to the institutional and financial aspects of plan implementation at the early stages in the planning process in each of the case studies because of this investigation will undoubtedly contribute to the end products.

This report identifies and describes a wide range of the institutional and financial issues which need to be considered as planning proceeds. In particular, Chapter 3 addresses evaluation of the institutional and financial aspects of designing an approvable waste treatment management system.

The term pollutant, as defined in Sec. 502 of PL 92-500, includes dredged spoil, incinerator residue, munitions, wrecked or discarded equipment, rock, sand, and cellar dirt as well as sanitary wastes and others. Pollution is defined as man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water. Under the Act all of these are to be dealt with in the areawide plans to the extent that they may degrade water quality. The discussions of institutional and financial arrangements in Chapters 4 and 5 specifically address pollutants identified to a substantial degree in the case study areas. Comments of Chapter 3 point out the institutional and financial considerations relating to implementation of programs to control the more significant pollutants and sources and causes of pollution. The conclusions and recommendations based on the case studies and on the discussions of Chapter 3, do not

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explicitly address all pollutants or pollutions or the programs needed for their control in the case study areas. However, the institutional and financial considerations to be evaluated apply to all aspects of the areawide plan including those not specifically discussed herein.

All of the case studies were of areas in which a local organization had been designated to carry out areawide planning. In non-designated areas, the responsible planning organization may be the state pursuant to Sec. 208(a)(6). Therefore, actions of the types recommended to the designated local planning organizations in the case study areas may be applicable as well as to the states.

Development of successful management arrangements is crucial to areawide waste management plans and the institutional and financial studies required for individual areawide plans will vary from place to place. The conclusions and recommendations herein describe the total range of the studies required. However, financial requirements for alternative plans will vary considerably in cost, timing and other aspects. Many of the studies may need to be carried out for each alternative considered. The same is true of instiutional studies. While careful organization of the planning process may reduce the number of institutional and financial studies required, these studies should not be limited to evaluation of a single plan. The findings of the institutional and financial investigations is essential and an important factor in the evaluation of alternative plans and may be significant in selection of the recommended plan. Their results may, in fact, dictate recommended plan selection.

Specific and detailed information was not available as a basis for assessing the nature of the plan for waste treatment management likely to be forthcoming for each case study area. The relevance of recommendations contained herein to other areas will be determined by the applicability of the conclusion from which the recommendation follows.

Few cases will exist in which one agency will constitute a fully capable manager for all aspects of the plan. Almost all institutional structures for management will necessarily be composed of multiple agencies. Typically, the authorities of state agencies will be needed for such activities as control of pollution from mining, financing, and coordination of local activities. On the local level of government, assurance of needed authorities will generally require participation of municipalities, counties and special purpose districts.

Processes to control or identify and set forth procedures and methods to control certain nonpoint sources of pollution which are to be included in areawide plans [Sec. 208(b)(F) through (K)] may be wholly developed by the state if the Governor determines that consistency with a statewide regulatory program under Sec. 303 so requires [Sec. 208(b)(4)]. If such processes pertinent to one or more nonpoint sources of pollution are developed and submitted by the Governor, they must be appropriate for all regions within the state. Such programs will need to be institutionally and financially workable when applied to highly variable local situations and therefore largely dependent on available state authorities. Conceivably, the processes developed by the State could address only particular institutional and financial facets of needed programs for which uniform statewide application was deemed necessary.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are broadly applicable to all or most areawide waste treatment management planning efforts including those in the case study areas and those carried out by states.

IDENTIFICATION OF NEEDED STUDIES

Conclusion:

> Adequate information can generally be obtained at the beginning of the planning process to enable approximate identification of the depth and detail of institutional and financial studies that will be required in developing an areawide waste treatment management plan.

Discussion:

> Scoping of needed studies is a requisite early step. Once approved, study budgets, work descriptions, and time schedules normally become part of the contractual arrangement between grantee and grantor. Shifts in budgets and schedules for development of plans are disruptive and detrimental, and should be minimized to the extent possible by careful preparation of work plans.

Institutional and financial arrangements for implementation are one of the most important parts of an approvable plan pursuant to Sec. 208. Because of the significance of providing effective management arrangements for implementing areawide plans, study schedules will be heavily influenced by the time required to undertake and complete institutional and financial studies.

Recommendation No. 1:

The time schedules, budgets, and descriptions of institutional and financial studies included in detailed work plans for carrying out areawide waste treatment management planning should be prepared after review of available information which identifies at least the following:

° existing and enabled units of government having potentially useful implementation authorities;

° major deficiencies or ambiguities in the authorities of existing or enabled waste treatment management agencies which may require legislative action for correction;

° the type and detail of further information which may be required for specific analysis, the time and cost associated with its acquisition, and the preferable procedures for acquisition.

CONTENT OF INSTITUTIONAL AND FINANCIAL STUDIES

Conclusion:

Selection or design of successful institutional and financial arrangements for areawide waste treatment management requires extensive consideration of other and more complex factors than availability of the legal authorities required by the Act.

Discussion:

Implementation of areawide plans is dependent in part upon review and approval of the plans by affected parties at all levels including the U.S. Environmental Protection Agency, the state, local governments within the planning area, and the general public. Public approval in particular may be crucial to the needed formation of districts and issuance of bonds.

Successful institutional and financial arrangements require an authoritative means to coordinate management agencies, to assure their promptness in implementing actions and to prevent adverse actions by non-designated independent agencies. Many of the techniques which are available to achieve this level of control are available only at the state level or can be best applied at the state level. New legislation may be required.

Various mechanisms are available which can be used to control certain of those entities whose performance is required. State plans pursuant to Sec. 303(e) of the Act must incorporate the elements of any appropriate areawide plans [Sec. 303(e)(3)(B)] and the permits and licenses issued pursuant to Title IV of the Act can be conditioned so as to insure that dischargers comply with the included plan elements. This device is applicable to all entities engaging in activities which may result in the discharge of wastes into navigable waters. Other waste producing entities may be forced to comply by designated management agencies having the authority to 'refuse to recieve any wastes from any municipality, or subdivision of an approved [areawide plan] applicable to such area' as required by Sec. 208(c)(2)(H). Conditioning eligibility for Federal and/or state funds for facility construction or reimbursement for prior expenditures upon adherance to the approved plan would also be effective in some instances. However, these several approaches only provide a means of control for cases involving entities engaged in the collection, transportation, treatment, and disposal of wastes.

Other more difficult cases may arise as, for example, the failure of a county or other government to institute effective regulatory actions. Actions in response to non-compliance from such entities (and from others as well) might include:

- designation of an alternative management agency if one is available;

- direct accomplishment of the needed action by the state if permitted by statutes;

- conditioning grant approvals for other purposes pursuant to Office of Management and Budget Circular A-95 upon compliance;

- impoundment of various funds if enabled by statute.

The several foregoing management techniques are most useful or only useful at the state level. Local governments have few tools to exact performance from other local governments.

Recommendation No. 2:

Institutional investigations, in addition to ascertaining the legal authorities of presently available waste treatment management agencies and needed additions thereto, should identify and evaluate factors affecting the efficacy of alternative arrangements including, among others, such as the following:

- relationship of waste treatment management to other federal, state, and local programs for the development, protection and use of land and water resources;

- consonance of regulatory program objectives with the extant social and economic goals in the area and with the specific objectives of programs carried out for other purposes;

- impact on existing intergovernmental relationships at each level of government and between levels of government;

- geographic or functional division of responsibilities;

- preferences of local and state agencies and the public for particular organizational forms or characteristics; and

- past performance of existing waste management agencies and evidence of willingness to assume different or expanded responsibilities.

Recommendation No. 3:

Identification of the available alternative financial arrangements for areawide waste treatment management and selection of those to be used must be based on knowledge of the capital, operation and maintenance, replacement, and overhead costs of plan implementation and encompass consideration of:

A. the legal authority of potential management agencies to incur indebtedness including:

   (i) constitutional debt limitations;

   (ii) statutory debt limitations;

   (iii) mandatory limitations on interest rates;

   (iv) present bonded indebtedness and remaining bonding capability; and

   (v) procedures and time requirements for issuance of bonds, notes, and other instruments.

B. the authority of potential management agencies to raise revenue including:

   (i) state statutes, agencies, rules and regulations, and policies concerning the establishment of rates and recovery of costs;

   (ii) flexibility in classifying users and setting rates;

   (iii) ability to proportion costs;

   (iv) required rate approvals; and

   (v) ability to recover industrially associated capital costs.

C. existing financial arrangements including:

   (i) unamortized cost of existing treatment facilities; and

   (ii) assignment of repayment responsibility among classes of users.

D. economic status of the area and classes of facility users including:

   (i) present total debt for all purposes and tax rates;

   (ii) availability of private capital; and

   (iii) impact on and capability of the communities involved to bear the cost of plan implementation.

E. salability of bonds; bond rating.

F. alternative allocations of the expenses of planning, monitoring, and other activities which may be optionally assigned to overhead or operational cost categories including the resulting shifts in placement of the financial burden therefore.

G. cost sharing among communities including:

   (i) procedures for establishment of proportional costs; and

   (ii) distribution of savings arising from regionalization.

H. procedures to assure investments are made on a timely basis in accord with planned priorities and schedules.

Recommendation No. 4:

The development of the institutional structure for management must be a cooperative effort of state and local officials and must be initiated at an early date.

SCHEDULING INSTITUTIONAL AND FINANCIAL STUDIES

Conclusion:

Where legislative or other action to effect plan implementation is necessary, considerable delay may be encountered between formulation and implementation of areawide plans. Such delays can jeopardize their financial integrity or the validity of the implementation plan and schedule.

Discussion:

Prior studies have indicated that potential management agencies seldom have all of the requisite legal authorities required by the Act. Additional authorities may be required depending on the particular contents of individual areawide plans. In toto, the existing complex of potential management agencies may have all, or nearly all of the requisite powers. Some agencies may need to be given authorities already possessed by other existing agencies in the area. Legislative action and/or public approval required to provide needed authorities or enable action would not be identified until late in the planning process and would be subject to strict and lengthy procedures related to legislative and elective cycles.

Areawide waste treatment management plans will frequently include complex structural components having a high level of interdependency and only a limited flexibility to accomodate modification readily.

Institutional arrangements must be made for overall control and coordination of the designated management agencies. The arrangements developed must be sufficient to insure that each management agency will carry out its assigned responsibilities. Moreover, the institutional and financial authorities necessary to achieve overall coordination and compliance as well as for other implementation purposes must be existing at the time of submittal of the plan to the Administrator so that they can become operative upon plan approval, at the latest. Early action is highly desirable.

Recommendation No. 5:

Investigation and evaluation of potential institutional and financial arrangements for waste treatment management, in a degree of detail sufficient for identifying major alternatives and constraints, should be initiated at the earliest possible time in the planning process. These investigations must be pursued to the extent required by the definition of problems and solutions in order that any needed formation of districts, modification of legislation, or other action may be initiated on a timely basis.

Recommendation No. 6:

Designated areawide planning organizations should place a high priority on securing the positive and authoritative coordination of all waste treatment facilities planning, modification, and/or construction within or affecting the designated planning area by all parties between the outset of the planning effort and final approval of the plan. Assistance from EPA, state agencies, and regional clearinghousees should be requiested to:

- control the application for and approval of grants and loans for water quality control related purposes; and
- place appropriate conditions on the issuance of discharge permits.

STATE CERTIFICATION OF PLANS

Conclusion:

Early action by states to establish specific legal or other requirements for areawide plan certification would assist the design of acceptable institutional and financial approaches to areawide waste treatment management.

Discussion:

Many areawide plans will be applicable to the most populous areas of states and the most perplexing water quality problems. Their implementation will require major expenditures, and enforcement of regulatory programs can be highly controversial. Certification of such plans will require explicit decisions having major policy impacts.

New institutions or modification of those now existing may be required to effect areawide waste treatment management. State level views will be influenced by numerous factors not readily apparent to local planning organizations.

Failure by states to clearly establish at least basic criteria for approval of areawide plans prior to their submission places an unnecessary burden on planning organizations and increases the likelihood of difficulties being encountered during the certification process.

Recommendation No. 7:

Designated areawide planning organizations within each state, individually and in concert with one another, should maintain close and regular communication with appropriate state agencies responsible for certification of areawide plans, approval of bond issues and establishment of utility rates. Such communication will make it possible to identify, articulate, and reach concensus on any state requirements affecting selection of the institutional and financial arrangements for areawide waste treatment management. The states, individually, should give immediate attention to their requirements for certification.

STATE PARTICIPATION IN PLANNING

Conclusion:

Development of areawide plans which provide for comprehensive management of waste treatment and effective implementation of such plans requires a joint state and local effort.

Discussion:

States have a vital role to play in areawide waste treatment management planning even where a local organization is designated and has the responsibility for plan development. Particularly important aspects of state participation include the provision of information and data from other ongoing or completed programs, input regarding state requirements, coordination with other designated local planning organizations, provision of technical assistance, certification of completed plans and provision of implementation assistance.

Failure to adequately integrate state participation in areawide waste treatment management planning processes increases the risk of areawide plans containing elements which are inconsistent with various state plans or approaches to implementation which are not acceptable. State certification of areawide plans will be delayed by the time required to study and fully understand the plan if involvement in its development has been lacking. It is essential that in a particular state, the areawide plans developed by individual designated areawide planning agencies be consistent as regards actions to be taken at the state level are concerned. State participation throughout the planning process is necessary to achieve this end.

In most situations, appreciable amounts of state assistance will be required to implement approved areawide plans and/or coordinate designated local management agencies. The state's assumption of responsibility for such actions may have budgetary, legislative or other implications and require a significant time for preparation.

Recommendation No. 8:

The fullest possible participation by appropriate state agencies in the areawide waste treatment management planning process must be provided.

COORDINATION OF STUDIES

Conclusion:

In the absence of specific action to provide coordination, institutional and financial studies carried out by two or more designated planning organizations within a state are likely to be performed independently and result in wasteful duplication of effort.

Discussion:

Separate institutional and financial investigations will be required in each designated planning area for determination of facts peculiar to the area. However, basic studies of the legal authority of various units of government, development of approaches to generally occurring problems and other investigations may be common to the needs of all planning organizations within a state.

Recommendation No. 9:

Duplicative studies by two or more planning organizations engaged in development of areawide waste treatment plans should be prevented either by the state or by EPA by either:

A. supporting certain studies of common benefit only in the first areawide planning effort undertaken in each state, and:

(i) assuring any such institutional and financial studies are conducted and published so as to make their results suitable for use in other areas; and

(ii) encouraging the grant recipients to contract, where possible, with appropriate state agencies for conduct of such studies.

B. providing funds directly to appropriate state agencies for conduct of certain basic institutional and financial studies of statewide application.

CONCLUSIONS AND RECOMMENDATIONS CONCERNING THE YOUNGSTOWN-WARREN, OHIO AREA

INSTITUTIONAL AND FINANCIAL STUDIES

Conclusion:

The institutional and financial capabilities of certain governmental units now existing or having jurisdiction in Mahoning and Trumbull Counties, or enabled under state statutes, must be evaluated at an early date to determine which, if any, are suitable for designation as management agencies responsible for implementation of the facilities related portion of the areawide plan to be developed.

Discussion:

Due to the large volume of municipal and industrial effluents requiring treatment and the presently low level of treatment provided, implementation of the facilities portion of the areawide plan will be of the utmost importance. Ohio statutes provide for a number of waste treatment management agencies. Prior studies indicate that while none of the agencies have sufficient legal authority to meet all federal requirements, regional sewer districts and the Ohio Water Development Authority have only a few deficiencies.

Because of the number of areas in Ohio either designated for or engaged in areawide waste treatment management planning, the types of studies required will have broad application and usefulness.

Recommendation No. 10:

The evaluation of institutional and financial capability should:

A. focus on the authorities of counties, municipalities, county sewer districts, conservancy districts, sanitary districts, regional sewer districts, and the Ohio Water Development Authority;

B. be initiated by requesting an opinion by the Ohio Attorney General as to the adequacy of the existing authorities of the entities named in (A) above to fully comply with the Act with emphasis on the following:

   (i) authority of all entities to refuse to receive wastes from any municipality or subdivision thereof which does not comply with any provisions of an approved areawide waste treatment plan applicable to such area;

   (ii) authority of county sewer districts to accept and utilize grants, or other funds from any source, for waste treatment management purposes;

   (iii) authority of municipalities, county sewer districts, conservancy districts, sanitary districts and regional sewer districts to recover from industrial users of treatment works that part of the federal share of the cost of construction of treatment facilities reasonably attributable to the treatment of industrial wastes;

   (iv) authority of conservancy districts and sanitary districts to assure in implementation of an areawide waste treatment management plan that each participating community pays its proportionate share of treatment costs;

C. identify the time requirements and procedures for:

   (i) formation of conservancy districts, sanitary districts, regional sewer districts and wastewater facilities service areas and expansion of the existing county sewer districts;

   (ii) issuance of revenue and general obligation bonds and other devices for raising revenue by each of the entities named in 1(A) above.

Recommendation No. 11:

EDATA should request the Ohio Environmental Protection Agency to identify any common needs for the evaluation of institutional and financial capabilities of waste management agencies enabled by Ohio statutes which may exist on the part of other designated planning organizations in Ohio and either:

- arrange for conduct of commonly required institutional and financial studies by the Ohio Attorney General;
- conduct the commonly required institutional and financial studies; or
- coordinate and manage a joint effort by two or more of the designated areawide planning organizations to conduct the commonly needed institutional and financial studies using existing staff or contracted assistance.

INSTITUTIONAL APPROACH TO FACILITIES MANAGEMENT

Conclusion:

Institutional approaches to areawide management of of waste treatment facilities in the Youngstown-Warren area that merit consideration include:

- a multi-agency management structure created by assignment of responsibility for the continued operation of existing facilities and the design, construction, operation and maintenance of new facilities to the municipalities and county sewer districts presently responsible for operation of waste collection and treatment facilities in the area accompanied by necessary legislative strengthening or supplementing of their authorities;
- a two agency management structure created by assigning the existing county sewer districts responsibility for all facilities related activities accompanied by necessary legislative strengthening or supplementing of their authorities;
- a single agency management structure created by merger of the existing county sewer districts either in fact of effectively through inter-governmental contracting, and assignment of responsibility for all facilities related activities to the resulting district accompanied by necessary legislative strengthening or supplementing of its authorities;
- a single agency management structure created by formation of a regional sewer district encompassing Mahoning and Trumbull Counties accompanied by necessary legislative strengthening or supplementing of its authorities;
- a single agency management structure created through the power of the Ohio Water Development Authority to establish wastewater facilities service areas accompanied by necessary legislative strengthening of its powers.

Discussion:

Alternative arrangements are available to EDATA for management of sewage treatment facilities because of the organizations enabled under state statutes and their possible use in combination with one another. County sewer districts, municipalities, and the Ohio Water Development Authority share the common advantage of already being in existence.

Municipalities in the area and the counties are available as management agencies for certain types of programs which may be required to control nonpoint sources of pollution due to storm water runoff. Counties could also be assigned responsibility for land use control to abate some types of agriculturally related pollution. However, no agency or other institution has the broad authorities needed for a comprehensive regulatory program to control nonpoint sources.

Regional sewer districts, based on preliminary investigation at least, have a substantial number of the authorities required for designation and would require minimum legislative action. This is the case also with the Ohio Water Development Authority. Use of either of these organizations may conflict with local desire to avoid large centralized management agencies.

Other types of management agencies that might be used in implementing an effective institutional structure include conservancy districts and sanitary districts. Use of either would require substantial remedial legislation and could involve considerable time for their establishment.

Conservancy districts, in order to meet federal requirements would need to be given adequate authority to refuse to receive wastes from noncomplying areas, to accept and use grants for all purposes, to assure proportional sharing of costs among communities and to recover industrially related construction costs. In addition, the purposes for which conservancy districts can be organized include 'providing for the collection and disposal of sewage and other liquid wastes produced within the district' but do not extend to all of the types of waste to be addressed in areawide waste treatment management plans. Organization of a conservancy district requires the circulation of petitions, impanelment of a court of common pleas and several other steps which may require extended periods to accomplish. Sanitary districts would have to be legislatively strengthened to be assured of meeting federal requirements regarding the acceptance and use of grant funds, proportional cost sharing among communities, refusal of waste from non-complying areas and recovery of industrially related costs. The purposes for which sanitary districts may be formed, while broader than those allowed for conservancy districts with respect to wastes, include only abating the pollution of streams, collection and disposal of liquid wastes and collection and disposal of garbage and refuse which may become a menace to public health. Formation of sanitary districts is through a procedure similar to that of conservancy districts.

In any of the alternative arrangements described, coordination of the activities of participants in multiple agency management, provision for plan revisions and assured performance of agencies in either single or multiple agency structures can be provided through:

- ° adoption of the certified plan by the Ohio Environmental Protection Agency as a part of Ohio's long term and comprehensive plan for water pollution control;
- ° promulgation of substantive facets of the plan as Agency regulations; and
- ° conditioning issuance of discharge permits upon compliance with the plan;

Recommendation No. 12:

EDATA should evaluate a multi-agency facilities management structure created by:

A. assignment of facilities related responsibilities to those entities currently owning, operating, and maintaining waste treatment facilities;

B. legislative strengthening of the Ohio Water Development Authority as necessary to:

    (i) enable it to refuse to receive wastes from communities or parts thereof which are not in compliance with any part of an approved areawide plan applicable to the area, and

    (ii) enable the execution of its authorities when necessary on behalf of, through, and/or by contract with municipalities and county sewer districts.

C. action by the Ohio Environmental Protection Agency to:

(i) adopt the certified areawide plan as a part of Ohio's long range and comprehensive plan for control of pollution;

(ii) issue as Departmental regulations such parts of the adopted plan as are within the Department's power;

(iii) condition issuance of discharge permits upon compliance with the plan;

(iv) issue appropriate orders for implementation of the plan by local entities;

(v) request establishment of a wastewater facilities service area by the Ohio Water Development Authority in the event any local entities fail to perform their assigned responsibilities.

ASSIGNMENT OF MONITORING COSTS

Conclusion:

Costs for the extensive monitoring necessary to establish charges for treatment of industrial wastes and to guide the appropriate recovery of capital costs will be large and require equitable assignment.

Discussion:

Because industrial wastes will probably account for a large portion of capital and operational costs for treatment facilities, industry's appropriate financial participation in implementing the areawide plan will be necessary as required by the Act. Widespread, frequent, and detailed monitoring will be required to measure adequately the service provided to individual industrial users of the system and the costs therefor.

Recommendation No. 13:

Costs for monitoring industrial effluents received for treatment should be imposed on industrial dischargers by:

- requiring frequent and detailed self-monitoring by those industries producing high volumes of effluent, heavily polluted effluents, or effluents which are highly variable in either volume or character; or

- incorporating the costs of periodic monitoring of all significant industrial wastes in use charges made to industries.

APPROACH TO CONSTRUCTION RELATED SOURCES OF POLLUTION

Conclusion:

The existing legal authorities and financial capability of Mahoning and Trumbull Counties, the several municipalities within the planning area and various Ohio agencies are probably sufficient to effect a substantial amount of control over the most important construction related nonpoint sources of pollution.

Discussion:

Counties, municipalities, and sometimes other units of government usually have adequate land use control or other authorities through zoning, subdivision regulations, building codes, grading ordinances and other regulatory programs to limit most private development to appropriate sites and to require the use of pollution abatement measures during construction.

Both local and state governments can appropriately conduct their own activities and insure that those carried out for them, by contract or otherwise, incorporate good practices. This must be made mandatory.

Recommendation No. 14:

The management approach to control of construction related nonpoint sources of pollution in the Youngstown-Warren area should include:

A. assignment of responsiblity for adoption and enforcement of appropriate building codes, subdivision regulations, zoning regulations and other necessary ordinances to municipalities and counties;

B issuance of an executive order by the Governor directing all state agencies to take cognizance of the needed control measures in conduct of their activities including:

(i) construction for or by state agencies;

(ii) issuance of permits for construction; and

(iii) provision, or approval of provision, of state or federal funds for construction or other activities involving construction.

C. adoption of appropriate parts of the plan regarding prevention of construction-related pollution by the director, boards or other officials of appropriate state agencies not responsible to the Governor and conduct of their activities in consonance with the plan.

APPROACH TO MINING RELATED SOURCES OF POLLUTION

Conclusion:

Establishment of methods and procedures for control of nonpoint sources of pollution related to mining will be difficult and possible beyond the areal extent of the areawide waste treatment management plan. The cost of implementing corrective measures may exceed local financial capability.

Discussion:

Extensive coal mining has taken place both in the planning area and other portions of Ohio and the need for the consequent abatement of pollution is not limited to Mahoning and Trumbull Counties. A major source of mining-related pollution is that from inactive or abandoned mines and their residual wastes.

Detailed and extensive legal, economic and engineering studies will be required to develop adequate technical and administrative approaches to control of mine related sources of pollution. Large investments will be required for implementation of structural measures, and, possibly, for indemnities to landowners.

Recommendation No. 15:

The institutional approach to mining-related sources of pollution should include assignment of responsibility to the agency designated for continuing the areawide planning process for identification of any sources of pollution not accomplished as part of the initial plan. Because of the widespread distribution of the problem, the Ohio Department of Natural Resources and/or the Ohio Environmental Protection Agency should be responsible for carrying out a process to set forth procedures and methods of control including:

- identifying needed further studies and and the cost and time requirements therefor;
- conducting required further studies;
- formulating, initiating, and enforcing necessary regulatory programs; and
- planning and implementing necessary structural measures.

CONCLUSIONS AND RECOMMENDATIONS CONCERNING THE SOUTHERN MAINE AREA

INSTITUTIONAL AND FINANCIAL STUDIES

Conclusion:

The information concerning the institutional and financial capabilities of potential waste treatment management agencies accumulated during the course of this study is sufficient for purposes of work plan development. Further evaluation will be required as a part of the planning process.

Discussion:

Only municipal sewer districts and sanitary districts are qualified in Maine as waste treatment management agencies. Certain deficiencies appear to exist in the authorities of each that may require remedial legislation. Institutional and financial studies required to support design of the facilities management system should not be extensive.

Inclusion of a detailed work plan for needed institutional and financial studies in the application for areawide planning funds will assure proper and timely consideration of these factors in plan formulation.

Recommendation No. 16:

The work plan prepared to accompany the application for areawide planning funds should set forth detailed budgets and time schedules for conducting needed institutional and financial studies. The work plan should provide for:

A. obtaining a more specific opinion of the Maine Attorney General than is now available as to the adequacy of the existing authorities of municipal sewer districts and sanitary districts to comply with federal requirements with emphasis on:

   (i) authority of municipal sewer districts to recover from industrial users of publicly owned treatment works that part of the federal share of the cost of construction reasonably attributable to the treatment of industrial wastes;

   (ii) authority of municipal sewer districts to assure that in implementing an areawide plan each participating community pays its proportionate share; and

   (iii) authority of municipal sewer districts and sanitary districts to refuse to accept wastes from any municipality or subdivision thereof which does not comply with provisions of an approved areawide plan applicable to such area;

B. drafting and submission of remedial legislation found necessary by the Attorney General for the type of district or districts to be designated as management agencies on a schedule enabling enactment prior to designation.

C. conducting institutional and financial studies of the type described in Recommendations 2 and 3.

D. investigating alternative sources of capital and/or incentives to aid and encourage private landowners in areas unsuitable for use of septic tanks to eliminate or modify their disposal systems at an early date including:

   (i) state or local financing;

   (ii) adjustment of state and local taxing policies.

INSTITUTIONAL APPROACH TO FACILITIES MANAGEMENT

Conclusion:

Two institutional approaches to the management of the facilities related portions of the areawide plan are available and should be considered. They are:

A. a multi-agency institutional management structure created by assignment of responsibility for the continued operation of existing facilities and the design, construction, operation and maintenance of new facilities to the municipalities, municipal sewer districts, and sanitary districts presently responsible for operation of waste collection and treatment facilities in the area accompanied by necessary legislative strengthening or supplementing of their authorities; or

B. a single agency management structure created by assignment of responsibility for all facilities related activities to:

   (i) a newly created areawide municipal sewer district accompanied by necessary legislative strengthening of its authorities; or

(ii) a newly created areawide sanitary district accompanied by necessary legislative strengthening of its authorities; or

(iii) legislative creation of a new type of special purpose district having adequate legal authorities.

Discussion:

The areawide plan in the Southern Maine area will probably include little regionalization of treatment facilities and, with the exception of extending sewers into rural areas, if such is found feasible, will probably not involve extensive construction.

Coordination of local activities by the State of Maine will be needed to insure adherance to priorities and schedules and to integrate operation of the several facilities to the extent possible.

Local preferences favor avoiding the use of a centralized authority and the circumstances do not indicate that one is necessary if adequate coordination can be otherwise provided.

Recommendation No. 17:

The plan of work prepared by the Southern Maine Regional Planning Commission should provide for specific investigation of the usefulness of a multi-agency facilities management organization created by:

A. assignment of facilities related responsibilities to those entities currently owning, operating and maintaining waste treatment facilities;

B. legislative action to supplement the authorities of municipal sewer districts and sanitary districts to enable each to refuse to receive wastes from non-complying areas and to recover appropriate portions of industrially related costs and to clarify the authority of municipal sewer districts to assure proportional cost sharing among communities.

C. action by the Maine Department of Environmental Protection to assure coordination of local activities by:

   (i) adoption of the substantive content of the certified areawide plan as a regulation of the Board of Environmental Protection; and

   (ii) conditioning grants, discharge permits and other actions on compliance with the plan.

APPROACH TO REGULATORY PROGRAMS

Conclusion:

Investigation of potential management authorities for needed regulatory programs should be a joint state-local effort.

Discussion:

The principal problems requiring regulatory action in the Southern Maine area are rapid private development of sites not suitable for use of septic tanks; open burning at waste disposal sites; problems engendered by construction of roads, homes, and industrial developments; and improper agricultural practices.

The Maine Department of Health and Welfare administers the state plumbing code which provides for control over unsuitable site development. Fully enforced, this will eliminate the occurrence of the problem in future developments. The usual local authorities for zoning and other types of regulation could also be used to control unsuitable development.

Most if not all road construction is conducted by or for state or local governments. Measures for the prevention of pollution resulting from construction must be adopted and enforced by these agencies.

Agricultural practices and solid waste disposal are statewide problems and are susceptible to a uniform statewide approach. The State of Maine should adopt and enforce appropriate control measures.

The difficulties experienced by local governments in adopting and enforcing regulatory controls, and the potential conflict between regulation of new development and local economic growth, indicate the desirability of assigning regulatory responsibility to state agencies.

Recommendation No. 18:

The Southern Maine Regional Planning Commission should:

A. make provision within the committee structure developed to guide the areawide planning process described in Chapter 4 for either:

    (i) participation of state agency members representing all agencies having a distinct relationship to area problems; or

    (ii) establishing a separate state level committee, possibly chaired by the Department of Environmental Protection, to investigate, describe, and recommend state action which can be undertaken in support of local efforts to control pollution.

B. emphasize institutional studies relating to control of agricultural practices and solid waste disposal as existing capabilities for control of these sources of waste are probably least advanced.

Recommendation No. 19:

The Maine Department of Health and Welfare should rigorously enforce the State Plumbing Code within the Southern Maine Area to assure that appropriate sewage disposal systems are provided for all new developments.

CONCLUSIONS AND RECOMMENDATIONS CONCERNING THE RALEIGH-DURHAM, NORTH CAROLINA AREA

INSTITUTIONAL AND FINANCIAL STUDIES

Conclusion:

Certain specific investigations appear needed before all of the potential institutional and financial approaches to waste treatment management planning available in North Carolina can be identified.

Discussion:

Existing information indicates that of the several potential management agencies, none have adequate legal authority to serve alone or in combination as the management agency or agencies for the facilities-related portion of the areawide plan.

Additional and extensive regulatory authorities may also be required to implement portions of the areawide plan dealing with nonpoint sources of pollution.

Recommendation No. 20:

An evaluation of the authorities and potential role in waste management of various governmental units either now existing in the designated planning area or enabled under North Carolina statutes should be undertaken as soon as possible to determine which organizations, if any, are wholly suitable for designation as management agencies responsible for implementation of part or all of the areawide plan to be developed. The evaluation process should:

A. specifically evaluate the institutional capability of:

   (i) counties;

   (ii) municipalities;

   (iii) sanitary districts;

   (iv) metropolitan sewage districts; and

   (v) water and sewer authorities.

B. be initiated by requesting an opinion of the North Carolina Attorney General as to the adequacy of existing authorities of the entities named in (A) above to comply with Sec. 208(c)(2)(B) through (I) with emphasis on the following:

(i) authority of counties, municipalities and metropolitan sewage districts to recover from industrial users of publicly owned treatment works that part of the federal share of the cost of construction reasonable attributable to the treatment of industrial wastes;

(ii) authority of sanitary districts to design, construct, operate and maintain waste treatment facilities;

(iii) authority of sanitary districts to accept and use grants, or other funds from any source, for waste treatment management purposes;

(iv) authority of sanitary districts to assure in implementing an areawide waste treatment management plan that each participating community pays its proportionate share of treatment costs; and

(v) authority of all entities named in (A) above to refuse to receive wastes from any municipality or subdivision thereof which does not comply with provisions of an approved areawide waste treatment management plan applicable to such area.

C. identify the time required for formation of sanitary districts, metropolitan sewage districts, and water and sewer authorities and the procedures therefore;

D. identify the time required and the procedure for issuance of revenue and general obligation bonds and other devices for raising revenue by counties, municipalities, sanitary districts and metropolitan sewerage districts and the issuance of revenue bonds by water and sewer authorities.

INSTITUTIONAL APPROACH TO FACILITIES MANAGEMENT

Conclusion:

Several basic institutional approaches to areawide waste treatment facilities management are available in the Raleigh-Durham area which merit consideration, including:

A. a multi-agency institutional management structure created by assignment of responsibility for the continued operation of existing facilities and the design, construction, operation and maintenance of new facilities to the local entities presently responsible for operation of waste collection and treatment facilities in the area. It should be accompanied by necessary legislative strengthening or supplementing of their authorities, and provision of coordination by the North Carolina Department of Natural and Economic Resources through:

    (i) adoption of the certified plan as a Departmental regulation; and

    (ii) conditioning issuance of permits upon compliance with the plan, or

B. legislative action to create or enable formation of a new type of areawide special purpose district having all authorities necessary to meet the requirements established by the Act or otherwise required for implementation of the plan. This entity would require the express capability to subcontract with entities now engaged in collection and treatment of wastes for the continued operation of existing and future facilities.

C. formation of a sanitary district, metropolitan water district or water and sewer authority encompassing all of the designated area in accordance with present statutes accompanied by legislative action as may be necessary to correct any deficiencies in the authorities of the selected district.

Discussion:

Negotiation among agencies to develop acceptable assignments of responsibilities offers real opportunities in the area because of the number of involved entities, the need for construction of advanced treatment facilities for sanitary wastes, the potential cost of installing storm sewers, the possibilities for regionalization of facilities, and the importation and exportation of wastes among stream basins. A concensus regarding the preferred institutional management structure will require some time to reach. The several basic alternatives preserve the local role in waste treatment management. Alternatives (B) and (C) above each will require extended times for implementation, but offer the benefit of providing an areawide agency that could serve as the vehicle for other functions.

In areas where regionalization is planned, the involved governments might use any one of a number of arrangements under alternative (A) to provide the needed level of coordination including intergovernmental contracting or organization of either a metropolitan water district or water and sewer authority throughout the affected area. Alternatives (B) and (C) would eliminate the need for this additional organizational adjustment.

The alternative financial arrangements that might be developed under each of the institutional alternatives can differ significantly.

Recommendation No. 21:

The Triangle J Council of Governments should:

- expand and describe the several alternatives cited and others that have potential as a basis for discussion;
- develop a conceptual level description of the financial arrangements suitable to each alternative institutional arrangement; and
- initiate discussions with affected parties, including the North Carolina Department of Natural and Economic Resources, at an early date.

APPROACH TO RECOVERY OF INDUSTRIALLY RELATED CAPITAL COSTS

Conclusion:

The Raleigh-Durham area has a large and relatively stable industrial base.

Discussion:

Over three hundred industries now discharge their wastes into municipal systems in the area, and additional industries would do so if required to provide private facilities at appreciable cost. With the exception of one discharger, those industries not presently using municipal systems are of such size that their decision to discharge into a municipal system would not substantially influence facility design.

Recommendation No. 22:

Consideration should be given to treating industries as a group for purposes of recovery of capital costs. This would avoid contracting with individual industries for repayment.

APPROACH TO DESIGN OF NONPOINT SOURCE CONTROL PROGRAMS

Conclusion:

Conduct of the areawide planning process pertaining to nonpoint sources of waste may cause difficulties in obtaining plan approval and implementation.

Discussion:

Early assessments of surface water quality in the Raleigh-Durham area indicate that, even after state-of-the-art treatment of municipal and industrial wastes, the assimilative capacity of area streams may be exceeded. Nonpoint source control will be a significant element in the areawide waste treatment management plan. The Triangle J Council of Governments presently intends to identify all sources of pollution and to set forth the procedures and methods for control as part of the areawide plan.

Inclusion of plan elements for control of nonpoint sources of pollution may require legal authorities or financial capability not now available and thereby prevent designation of appropriate management agencies and/or implementation processes.

Recommendation No. 23:

The areawide planning process should provide for nonpoint source controls that are implementable. The following general steps shown in the sequence presented should be included:

- identify the nature, location and extent of nonpoint sources of pollution;
- determine the level of control needed and the types and costs of actions which might be successfully employed;
- investigate the legal authority and financial capability to carry out the actions needed; and
- design the regulatory portion of the areawide plan within the bounds of legal authority and financial capability which presently exist or can be feasibly arranged.

SCHEDULING INSTITUTIONAL AND FINANCIAL STUDIES

Conclusion:

As presently scheduled in the preliminary plan for work, the period alloted for institutional studies is too brief for comprehensive analysis.

Discussion:

The preliminary plan of work indicates that the majority of institutionally oriented investigations will be carried out over a four month period between the seventh and thirteenth month of the planning period. The planning process may not have reached the stage of plan formulation by that time and later studies may be required which extend to near the end of the planning process.

The institutional and financial aspects of implementation are essential elements in the planning process and must be fully considered in evaluation of alternatives. The institutional and financial arrangements necessary for implementation are a critical consideration in selection of the recommended plan.

Recommendation No. 24:

> The detailed plan of work for institutional and financial studies should provide for a continuing sequence of investigation which becomes increasingly more specific as the identification of problems and solutions is improved.

CONCLUSIONS AND RECOMMENDATIONS CONCERNING THE U.S. ENVIRONMENTAL PROTECTION AGENCY

The following conclusions and recommendations are addressed specifically to EPA and concern both actions which appear needed and their possible means of accomplishment. Some of the recommended actions may also be applicable to states which, like EPA, have responsibility for approval of areawide waste treatment management plans and which, in addition, are responsible for the designation of management agencies.

NEED FOR PROGRAM OF INFORMATION AND EDUCATION

Conclusion:

> A desirably high and uniform level of understanding of the areawide planning process process on the part of federal, state, and local participants has not been achieved, particularly with respect to the institutional and financial aspects of implementation and the requirements of EPA pertaining thereto. Unless additional technical assistance is forthcoming this deficiency will result in:
>
> - an uneven quality of institutional and financial investigations conducted by designated planning organizations; and
> - development of management approaches in some areas which may be of doubtful efficacy and acceptability.

Discussion:

The areawide waste treatment management planning program is new, and relatively few areas are presently engaged in plan preparation. Few opportunities have existed since initiation of the first 208 planning effort in the Raleigh-Durham, North Carolina, area for participants in areawide planning, including federal, state, and local staffs, to exchange information and to develop cooperatively innovative procedures for plan development.

Experience already gained by federal, state, and local staffs associated with areawide planning efforts presently underway, could be combined to the advantage of those presently engaged in areawide planning and those expecting to do so in the future.

Guidelines prepared and issued by EPA cite important points to be considered in institutional and financial studies, including requirements of the Act, and identify basic arrangements that may be developed. Little information or guidance is provided on procedures for carrying out necessary studies or analysis of the results of such studies to select the most appropriate management systems.

The level of experience in institutional and financial planning on the part of local and state organizations normally assigned water quality planning responsibilities is generally less than that related to biologic, chemcial, environmental and economic aspects of water quality control.

Time is of the essence in areawide planning. All possible efforts should be made to expedite the initiation and successful completion of needed institutional and financial studies.

Recommendation No. 25:

A more detailed program should be undertaken by EPA to:

A. issue guidelines which address, in greater detail than those now available, the conduct of institutional and financial studies to be made as part of areawide waste treatment management planning including:

(i) types of studies required;

(ii) procedures for carrying out needed studies;

(iii) scheduling and budgeting of studies;

(iv) integration of information resulting from institutional and financial studies and the relationship with other parts of the planning process.

B. conduct a further set of institutional and financial detailed studies in one designated area to demonstrate proper and productive techniques therefor including:

(i) sources of information;

(ii) methodology;

(iii) level of detail;

(iv) analysis of findings.

Recommendation No. 26:

A program of information and education should be undertaken immediately by EPA to attain a better and more uniform understanding of the institutional and financial implications of the purposes, requirements, and procedures for areawide planning on the part of officials and staff of designated planning organizations, state agencies, and Regional Offices. Useful efforts would include:

A. preparing and distributing a packet of informational and resource materials for designated planning organizations including:

(i) The Act;

(ii) guidelines, rules, regulations and other published materials which provide instruction or requirements pertaining to the institutional and financial aspects of areawide planning or plan implementation;

(iii) an annotated extract from the Act and Guidelines comprising all sections and other parts relating directly to the institutional and financial aspects of areawide planning;

(iv) resource materials of direct applicability including all publications noted in the categorized bibliography as relevant to the institutional or financial aspects of areawide plan implementation;

(v) a comprehensive and sequential description of a generally applicable process for carrying out institutional and financial studies of the type needed for areawide plan development, prepared in sufficient detail to assist local organizations in budgeting time and money for institutional and financial studies; and

(vi) example work plans or parts thereof which contain adequate treatment of institutional and financial elements of the planning process.

B. arranging and conducting two regional meetings for appropriate representatives of EPA Headquarters and Regional staffs, states and planning organizations with presentations and workshops on salient topics including at least the following:

(i) identification of required institutional and financial studies;

(ii) budgeting and time scheduling for institutional and financial studies;

(iii) conduct of institutional and financial studies; and

(iv) establishment of state procedures and criteria for review and approval of areawide waste treatment management plans.

C. preparing and distributing additional guidelines which furnish interpretation of certain terms and passages of the Act and clarifying, among other points, the following:

(i) the authorities necessary to comply with Sec. 208(c)(2)(H) with particular reference to whether authority to make regulations regarding the type of waste discharged to the system or authority to impose economic sanctions on non-complying areas areas is adequate;

(ii) the specific functional definition of the term "appropriate portions" contained in Sec. 208(c)(2)(A);

(iii) the extent to which Sec. 201(e) requires regulatory programs to be supported by revenues derived from operation of waste treatment facilities; and

(iv) the approvability of management agencies designated to carry out the continuing planning process which do not include elected officials from local governments and/or were not designated pursuant to Sec. 208(a).

PROVISION OF MODEL LEGISLATION

Conclusion:

Encouragement and support of state efforts to develop suitable water quality control legislation will be beneficial and is needed.

Discussion:

Most, if not all, state legislatures will need to take some action to enable areawide waste treatment management institutions that meet all of the express and implied requirements of the Act. If areawide plans now underway and soon to be started are to be successfully implemented on a timely basis, early legislative action is needed. The opportunities for achieving adequate legislation will be enhanced by a coordinated approach to state legislatures and committees thereof through various national associations to supplement the efforts of designated areawide planning agencies and their counterpart state agencies.

Because of the importance of time, it is necessary that the EPA succinctly describe approvable statements of authority.

Recommendation No. 27:

The U.S. Environmental Protection Agency should:

A. develop or sponsor the development of model statute provisions deemed adequate to meet the major types of deficiencies existing in state statutes which prevent full compliance with the Act by areawide waste treatment management agencies; and

B. call the availability of the model statute provisions and the need therefore to the attention of appropriate entities through:

    (i) direct contact with Governors, other appropriate state officials, and designated planning organizations;

    (ii) various national and regional associations.

INSTITUTIONAL STRUCTURE FOR MANAGEMENT

Conclusion:

Presently available techniques for intergovernmental coordination and areawide waste treatment management are not adequate for assuring implementation of areawide waste treatment management plans.

Discussion:

Presently available techniques to assure the performance of designated management agencies and to coordinate their actions include use of discharge permits, withholding of funds, withholding of approvals under the A-95 review procedure, and miscellaneous other devices applicable to one or another type of agency. Use of some of these techniques are of doubtful efficacy. Withholding of funds for needed facility construction to force adoption of a regulatory program may not be in the best interests of achieving adequate pollution control. Similarly, use of clearinghouse procedures to press for action in waste treatment may only delay other urgently needed programs and, in effect, make hostages of their beneficiaries.

Where they can be constructed, institutional structures for management composed of a hodge-podge of the foregoing and other similar arrangements would be complex, difficult to administer, and a basis for acrimonious debate.

Recommendation No. 28:

The U.S. Environmental Protection Agency should undertake a study of the means whereby the full implementation of areawide waste treatment management plans may be assured including:

A. requiring legislative and other types of action by states such as designation of a single responsible state agency to enforce the implementation of areawide plans; and

B. possible modifications to Public Law 92-500.

SCHEDULING OF INSTITUTIONAL AND FINANCIAL STUDIES

Conclusion:

Proper scheduling of institutional and financial studies is important to timely implementation of areawide waste treatment plans and should be assured.

Discussion:

Prior resource planning has not emphasized the early implementation of plans and studies of institutional and financial matters. These have all too frequently been undertaken at the conclusion of technical planning efforts.

The proper and full conduct of appropriate institutional and financial studies is extremely important because of their role in selection of the recommended plan. Actions found needed by institutional and financial studies will be the first steps necessary in plan implementation and should be initiated at the earliest possible date.

Recommendation No. 29:

Work plans submitted for review as part of or subsequent to an application for funds should be carefully examined to assure institutional and financial studies are scheduled at an early date and are adequate in scope.

FURTHER INVESTIGATION OF CASE STUDY AREAS

Conclusion:

Additional monitoring of early areawide waste treatment management planning efforts would be beneficial to the efforts of EPA to identify impediments to the timely completion and implementation of areawide plans and to assist in their resolution.

Discussion:

The range of problems existing or likely to exist in the three case study areas are sufficiently diverse to warrant continued use of the areas for future study. Continued use of the same case study areas would enhance the efficiency of future studies due to the considerable amount of information already assembled describing the present situation. In addition, the possible range of management approaches could be advantageously extended by addition of three other case study areas introducing respectively: an example of an already existing, strong centralized management agency; an example of simultaneous development of approaches to implementation of both an areawide waste treatment plan and a Level B Study developed pursuant to Section 209 of the Act; and an example of the development of an areawide plan or portions thereof in response to Sec. 208(a)(6) or Sec. 208(b)(4).

Officials and staff of local planning organizations and state agencies contacted during the on-site investigations generally found the intensive and detailed discussions carried out to be helpful and informative and indicated willingness to participate in a continued investigation.

Recommendation No. 30:

Regular periodic monitoring of the Youngstown-Warren, Ohio; Southern Maine; and Raleigh-Durham, North Carolina, areas and other selected areas should be carried out to build upon the information assembled in this report and:

- identify problems as they arise and suggest needed actions by EPA and others;
- analyze the insitutional and financial approaches which will be proposed, contemplated or undertaken in each of the areas;
- assess the procedures of local, state, and federal agencies for review and approval of the areawide plans;
- identify and analyze the institutional structures under consideration for management with particular emphasis on the means whereby coordination of the actions of management agencies are assured and coordinated, and adverse actions by non-designated independent agencies are prevented;
- appraise the efficacy of plan implementation, problems arising therein and remedial action taken.

CHAPTER 3

INSTITUTIONAL AND FINANCIAL ASPECTS OF PLAN IMPLEMENTATION

The Act provides [Sec. 208(a)(1)] for development of guidelines for identification of those areas which, as a result of urban-industrial concentrations or other factors, have substantial water quality control problems. The Governor of each state is mandated to identify areas within the state having such substantial water quality control problems. After consultation with local officials, the Governor is to designate the boundaries of such areas and a single representative organization capable of developing an effective areawide waste treatment plan for the area. In the event the Governor (or Governors in the case of an interstate area) neither designates an area thought by local officials to have substantial water quality control problems nor specifically non-designates the area, the chief elected officials of the local governments in the area may by agreement make the designations of boundary and planning organization. The state is directed by Sec. 208(a)(6) to act as a planning agency for all portions of the state which are not designated. Regardless of what agency or level of government is responsible for development or areawide plans, the Governor has ultimate responsibility for their certification and for designation of the management arrangements.

The Governor must designate the waste treatment management agency or agencies responsible for carrying out a certified areawide plan when the plan is submitted to EPA for approval [Sec. 208(c)(1)]. This designation, to be made in consultation with the planning organization responsible for development of the areawide plan, is the critical last step in the planning process. The Act insures that consideration will be given to this important decision during the planning process by requiring that the areawide plan include:

> *the identification of those agencies necessary to construct, operate, and maintain all facilities required by the plan and otherwise to carry out the plan..* [Sec. 208(b)(2)(D)]. *and*

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> *the identification of the measures necessary to carry out the plan (including financing); the period of time necessary to carry out the plan, the costs of carrying out the plan within such time, and the economic, social and environmental impact of carrying out the plan within such time..* [Sec 208(b)(2)(E)].

Basic institutional and financial approaches to waste treatment management for point sources, particularly for the collection, treatment and disposal of municipal sewage, are available. Less frequently are adequate institutions and financial capabilities available to control significant nonpoint sources of pollutants. An effective means for coordinating and integrating both management of facilities and other control actions is seldom available.

Alternative institutional and financial approaches for selection of an implementation strategy to be recommended in any areawide plan requires detailed knowledge and comparison of the minimum requirements established by Sec. 208(c)(2) and other portions of the Act; the guidelines[1/] issued by EPA for implementation of the Act; EPA rules and regulations; and the particular needs of the area.

INSTITUTIONAL ASPECTS

Institutional aspects of areawide waste treatment management comprise an intertwined group of factors springing from law, explicit as well as unstated policies at all levels of government, and pragmatic recognition of political realities.

An effective institutional system for areawide waste treatment management requires that each participant possess legal authority necessary to fulfill its assigned role, and be willing to assume assigned responsibility. Each participant must have the managerial, technical and financial capability to carry out its assignment in an effective, efficient and timely manner.

One of the most difficult tasks for areawide planning agencies and for Governors will be the development

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[1/] U.S. Environmental Protection Agency; Draft Guidelines for Areawide Waste Treatment Management; Washington, D.C. 1974.

of an institutional structure for management which will provide authoritative coordination of implementation actions taken by designated management agencies, which will provide an adequate measure of control over non-designated agencies whose actions impact water quality, and which will assure action to comply with the plan by all agencies involved. Whatever structure for management is developed must be sufficient to cause or forbid action in accord with the requirements of the plan.

Resolutions by affected local governments in designated planning areas which are adopted prior to EPA approval of the designated planning agency may express an intent to participate in implementation. However, resolutions as such are not binding requirements. In order to insure performance, some type of contractual arrangement dependent on plan approval may be useful in some cases.

The institutional structure for management must provide for some measure of control over possible adverse actions of public agencies which are not designated management agencies. Since all actions necessary to implement the plan will be assigned to one or another management agencies, the desired result is prevention of actions detrimental to the control and management of wastes. The cooperation of state executive agencies can be assured by the Governor's issuance of appropriate executive orders. However, many agencies at the state and regional level are not responsible to the Governor. Legislative action recognizing the plan and directing compliance may be required. Even stronger action may be necessary to insure compliance in some cases.

Achieving a satisfactory and sure arrangement for coordination of and assuring the performance of management agencies and control over the adverse actions of non-designated independent agencies may require legislation. Legislation should provide for the adoption of areawide plans in one way or another and provide authority for the issuance of orders necessary for their implementation.

Statewide development of regulatory programs pursuant to Sec. 208(b)(4) of the Act may be particularly attractive since effective controls to insure plan implementation and prevent adverse actions by non-designated agencies lie predominantly at the state level and their application or development will often require direct action by the Legislature or Governor.

Federal Requirements

The federally established requirements for an institutional approach to areawide waste treatment management are largely limited to availability of certain legal authorities either explicitly set forth in Sec. 208 or required by other related sections of the Act. Section 208(c)(2) requires that the agency or agencies designated as management agencies have adequate authority:

> *(A) to carry out appropriate portions of an areawide waste treatment management plan developed under subsection (b) of this section;*
>
> *(B) to manage effectively waste treatment works and related facilities serving such area in conformance with any plan required by subsection (b) of this section;*
>
> *(C) directly or by contract, to design and construct new works, and to operate and maintain new and existing works as required by any plan developed pursuant to subsection (b) of this section;*
>
> *(D) to accept and utilize grants, or other funds from any sources, for waste treatment management purposes;*
>
> *(E) to raise revenues, including the assessment of waste treatment charges;*
>
> *(F) to incur short-and long-term indebtedness;*
>
> *(G) to assure in implementation of an areawide waste treatment management plan that each participating community pays its proportionate share of treatment costs;*
>
> *(H) to refuse to receive any wastes from any municipality or subdivision thereof, which does not comply with any provisions of an approved plan under this section applicable to such areas; and*
>
> *(I) to accept for treatment industrial wastes.*

The areawide waste treatment plan referred to in item (A) above and set forth in Sec. 208(b)(2) is to include:

(A) the identification of treatment works necessary to meet the anticipated municipal and industrial waste treatment needs of the area over a twenty-year period; annually updated (including an analysis of alternative waste treatment systems), including any requirements for the acquisition of land for treatment purposes; the necessary waste water collection and urban storm water runoff systems; and a program to provide the necessary financial arrangements for the development of such treatment works;

(B) the establishment of construction priorities for such treatment works and time schedules for the initiation and completion of all treatment works;

(C) the establishment of a regulatory program to--

> *(i) implement the waste treatment management requirements of section 201(c),*[2]
>
> *(ii) regulate the location, modification, and construction of any facilities within such area which may result in any discharge in such area, and*
>
> *(iii) assure that any industrial or commercial wastes discharged into any treatment works in such area meet applicable pretreatment requirements;*

(D) the identification of those agencies necessary to construct, operate, and maintain all facilities required by the plan; and otherwise to carry out the plan;

(E) the identification of the measures necessary to carry out the plan (including financing), the period of time necessary

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[2] Section 201(c) states that "To the extent practicable, waste treatment management shall be on an areawide basis and provide control or treatment of all point and nonpoint sources of pollution, including in place or accumulated pollution sources."

to carry out the plan, the costs of carrying out the plan within such time, and the economic, social, and environmental impact of carrying out the plan within such time;

(F) a process to (i) identify, if appropriate, agriculturally and silviculturally related nonpoint sources of pollution, including runoff from manure disposal areas, and from land used for livestock and crop production, and (ii) set forth procedures and methods (inclding land use requirements) to control to the extent feasible such sources;

(G) a process to (i) identify, if appropriate, mine-related sources of pollution including new, current, and abandoned surface and underground mine runoff, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

(H) a process to (i) identify construction activity related sources of pollution, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

(I) a process to (i) identify, if appropriate, salt water intrusion into rivers, lakes and estuaries resulting from reduction of fresh water flow from any cause, including irrigation, obstruction, ground water extraction, and diversion, and (ii) set forth procedures and methods to control such intrusion to the extent feasible where such procedures and methods are otherwise a part of the waste treatment management plan;

(J) a process to control the disposition of all residual waste generated in such area which could affect water quality;

(K) a process to control the disposal of pollutants on land or in subsurface excavations with such area to protect ground and surface water quality.

Reading Sec. 208(c)(2) with the incorporated references to Sec. 201(c), grant provisions in Sec. 204(b)(1), and various definitions provided in the Act and included in Appendix A, is requisite for a full understanding of the minimum legal requirements for the institutional structure for management established by the Act. Collectively these requirements provide guidance to the objectives of the areawide plan, establish requirements for problem solution, and prescribe the necessary characteristics of the management agency or agencies to be designated.

Under the Act, a consortium of management agencies is approvable if the collective authorities of all agencies can accomplish at least the following:

General requirements to be met--

- to the extent practicable, waste treatment management can be carried out on an areawide basis;
- to the extent practicable, waste treatment can provide control or treatment of all point and nonpoint sources of pollution, including in-place or accumulated pollution sources;
- grants or other funds can be accepted from any source and used for waste treatment management purposes;
- appropriate portions of the plan can be implemented; and
- wastes from any municipality or subdivision thereof which does not comply with any provisions of the approved areawide plan can be refused.

In carrying out the facilities portion of an areawide plan, the designated management entity or entities can:

- design and construct new works;
- require the initiation and completion of treatment works in accord with an approved time schedule;
- operate and maintain new works in accord with the areawide plan;

- manage effectively waste treatment works and related facilities in accord with the areawide plan;

- assess waste treatment charges;

- operate a system of charges to assure that each system user pays a proportionate share of costs for operation, maintenance, and replacement;

- accept and treat industrial wastes;

- recover from the industrial users of the treatment works that portion of the federal share of the cost of construction of treatment works reasonably attributable to treatment of industrial wastes;

- incur short and long-term indebtedness; and

- proportionately divide treatment costs among participating communities.

In carrying out the regulatory portions of an area plan, the management entity or entities can:

- regulate the location, modification, and construction of facilities which may result in any discharge;

- control the disposition of residual wastes which could affect water quality;

- control the disposal on land or in subsurface excavations of solid waste, sewage sludge, radioactive materials, dredged spoil, garbage, munitions, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, industrial wastes, municipal wastes, and agricultural wastes; and

- regulate the character of any industrial or commercial wastes discharged into any treatment works.

In carrying out the planning related portions of an areawide plan, the management entity or entities can:

- annually update the identification of treatment works necessary in the succeeding twenty-year period and revise the priorities and time schedules for their initiation and completion;

- annually update the analysis of alternative waste treatment systems;

- initiate and carry out a process to identify, if appropriate, sources of pollution related to agricultural and silvicultural nonpoint discharges, mine runoff, construction activity, and salt water intrusion; and

- initiate and carry out a process to set forth procedures and methods to control, to the extent feasible, sources of pollution including: nonpoint agricultural and silvicultural discharges, runoff from mines, construction activities, and salt water intrusion.

These authorities for implementating the plan must exist at the time the certified plan and the identification of the designated management agencies are submitted to the Administrator of EPA for approval. The Act prescribes in Sec. 208(c)(1) that the Governor--

> *..shall designate one or more waste treatment management agencies (which may be an existing or newly created local, regional or state agency or political subdivision)..*

For approval, organization of new agencies must be precedent to their designation. Where deficiencies in authorities occur in existing agencies, correction of deficiencies is required for approval. No flexibility is provided by the Act to substitute a description of any legislative process or proposed action that would establish adequate management agencies at a later date in lieu of a specific designation. The guidelines[3] are specific in this regard, noting that:

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[3] U.S. Environmental Protection Agency; op. cit. pp. 3-11.

> *In many cases existing law will be inadequate and supplemental or enabling legislation will have to be passed to provide management agencies with the needed authority prior to the time of plan approval.*

The potential impact of the Act's requirement that the management agency have adequate legal authority to refuse to receive wastes from municipalities or subdivisions thereof not in compliance with *any* applicable provisions of an approved areawide plan warrants special attention. In this context, the term municipalities is defined by the Act to include "a city, town, borough, county, parish, district, association, or other public body created by or pursuant to state law and having jurisdiction over disposal of sewage *"..or a designated and approved management agency under Section 208 of this Act."* Refusal to receive wastes would be a harsh action involving hardships for the general public, disruption of commerce, and perhaps grave questions of public health. While lesser measures are more likely to be used in practice to obtain compliance, the Act nevertheless requires this authority.

The Act's principal vehicle for insuring action to implement the regulatory and other features of an approved areawide plan is placed in the hands of the agency or agencies designated for facilities management. This arrangement has unusual institutional connotations in that many facilities management agencies may be established by or be otherwise dependent on counties, municipalities or other governmental units assigned regulatory responsibility. Legislative concurrence that facilities management agencies, including special purpose districts, should have this authority will not in most cases be indiscriminately or arbitrarily granted.

No great need for an areawide agency for facilities management exists where collection, treatment, and disposal of wastes is to be accomplished without significant regionalization. In such cases, arming each of the local facilities management agencies with appropriate authorities either directly or indirectly through a state agency or other entity may be relatively straightforward. Each local agency may then operate within its jurisdiction.

An effective structure for management to carry out the regulatory nonpoint sources control portions of an areawide plan is far more difficult to achieve from an institutional standpoint that is the case for municipal and industrial point sources. Even in that simpler case, the geographic limitations of authority may require a patchwork of management agencies to exercise control over an entire designated area.

In addition to management programs for collection, treatment, and disposal of municipal and industrial wastes, programs may be required to regulate or otherwise control water pollution from point and nonpoint sources including among others, those needed to:

- regulate the location, modification and construction of any facilities which may result in any discharge;
- identify and control agriculturally related nonpoint sources of pollution;
- identify and control silviculturally related nonpoint sources of pollution;
- identify and control mine-related sources of pollution;
- identify and control construction activity related sources of pollution;
- identify and control causes resulting in salt water intrusion;
- control the disposition of residual waste; and
- control the disposal of pollutants on land or in sub-surface excavations.

Regulate the Location, Modification, and Construction of Facilities - To be considered are those facilities that result in any discharge including among others: industrial plants; homes; public buildings constructed by federal, state, or local agencies; power plants; refineries; and rural and urban drainage systems. Water quality management planning should adequately consider such discharges in comprehensive land use plans, and in special purpose plans affecting land use such as transportation, recreation, and housing so that facilities location for water quality control will mesh with that for other purposes.

Conflicts between programs to be undertaken for separate purposes may be a serious impediment to fulfillment of the regulatory responsibilities by designated management agencies. Yet, if an areawide plan is to be implemented effectively, such conflicts must be resolved.

Identify and Control Agriculturally Related Sources of Pollution - Nonpoint sources of pollution related to agricultural activities include: wind erosion; water erosion; use of chemicals including fertilizers, herbicides, fungicides and insecticides; and animal wastes. Programs to identify the sources of pollution will include requiring landowners to report their practices and/or to obtain permits prior to engaging in certain activities such as confined livestock feeding and application of chemicals.

Water and wind erosion control measures include use of conservation tillage, contour farming, use of cover crops, avoidance of steep slopes and unsuitable soils, control or elimination of irrigation drainage, proper placement and sizing of fields and other practices.[4]

Measures to reduce the extent of pollution resulting from use of needed fertilizers and pesticides include: proper timing and placement of easily leached materials; restricted use of selected compounds; limitation of application rates; and control of disposal.[5] Those measures amenable to regulatory control may be best handled by programs at the state and/or national level.

Nonpoint pollution due to animal wastes occurs through runoff from or over confined feeding facilities, the land on which wastes from feeding facilities have been disposed, and from pastureland.[6]

Regulatory actions such as registration will be necessary to identify the existence and location of concentrated livestock feeding operations and number of livestock on pasture. Control requires proper disposal of wastes, conservation measures to regulate overland flow, and suitable location of feedlots.

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[4] U.S. Environmental Protection Agency; Methods and Practices for Controlling Water Pollution from Agricultural Nonpoint Sources; Washington, D.C. 1973.

[5] Ibid. pp. 31-48.

[6] Ibid. p. 53.

The problem of agriculturally related nonpoint sources of pollution generally falls outside the jurisdiction of municipalities. Few special purpose districts are given the types of regulatory authorities necessary to control land use adequately. Where land use control authority has been given special purpose districts with jurisdiction in rural areas, such as soil conservation districts in some states, the districts have been extremely reluctant to use such authority. Effective regulatory action may require that state agencies and counties be assigned regulatory responsibility if their authorities permit.

Identify and Control Silviculturally Related Sources of Pollution - Pollution from forest practices is largely nonpoint in origin and defies control or treatment in the conventional sense. The treatment and control methodology is almost exclusively limited to forest management practices involved in harvesting, transportation, reforestation, fire protection, control of disease and insects, and promotion of growth.[7/]

Regulatory programs for pollution control must be adopted to conditions peculiar to each site. Program objectives will include measures to minimize erosion; avoid the placement in or near streams of fertilizers and of chemicals to control fire, insects or weeds; and to have the earliest possible regrowth. Unless carefully designed, pollution abatement measures may conflict seriously with the economics of continued silvicultural activities.

Pollution due to silvicultural activities is widespread where it occurs but limited to rural areas. State or federal (in the case of federally owned lands) governments' authorities will generally be needed to effect abatement in areas designated pursuant to Sec. 208.

Identify and Control Mine-Related Sources of Pollution - Pollution from surface mining (i.e., strip, open pit,

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[7/] U.S. Environmental Protection Agency; Processes, Procedures and Methods to Control Pollution Resulting from Silvicultural Activities, Washington, D.C. 1973.

and hydraulic mining and dredging) results from disturbance of the soil surface with consequent heavy production of sediment, and from drainage containing acids and other pollutants. Underground mining causes significant chemical pollution of waters. Abandoned mines will be major targets in areawide management plans since active mines will be regulated by federal and state discharge requirements.[8]

In addition to sedimentation and acid drainage, pollution from mining results from radioactivity, leaching of various pollutants and toxic concentrations of metals. Control of mine-related pollution requires either at-source abatement or treatment of the drainage from mines. Many of the available technologies are largely theoretical.

Needed control actions include: proper preplanning of mining operations; selection of mining techniques; overburden segregation; use of barriers; controlled mineral extraction; infiltration control; and rehabilitation, including reestablishment of vegetation.

The application of regulatory measures to abandoned or inactive mines and/or tailings and other residuals will be complicated by questions of ownership and liability for correction.

Structural measures to seal mines or treat drainage in the case of abandoned mines will generally be expensive. Furthermore, no revenues are generated by installation and/or operation of measures and treatment works where present landowners are not those originally associated with the mining activity. A clear inequity would be caused by having present municipal and industrial dischargers finance such works through their user charges. Regulatory authority and financial assistance for pollution control measures in abandoned mines will, therefore, generally stem from the state or the United States.

Identify and Control Construction Activity Related Sources of Pollution - The principal pollutant produced during construction activities is suspended sediment. Other pollutants associated with construction activities include pesticides, petrochemicals, solid wastes, chemicals, waste and cooling water, cement, lime, and fertilizers.[9] In cold climates, the use of sodium cloride or other deicing chemicals may be carried directly to streams or gound water by snowmelt. Pollution damage from construction activity is determined by the physical characteristics of the site (i.e., topography, soils, drainage systems, etc.) and proximity to receiving waters.

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[8] U.S. Environmental Protection Agency; Processes, Procedures and Methods to Control Pollution from Mining Activities; Washington, D.C. 1973.

Methods for abating pollution from active construction sites include use of erosion and storm water management control structures for trapping sediments. Short of installation of facilities for treatment or long term detention of runoff, both of which may be impractical, the technology for control of pollution from fertilizer and other chemicals, oils, and dissolved solids, is limited to careful handling of materials to minimize the pollution of surface runoff or percolating waters.

Regulatory actions to abate pollution from construction activities include: requiring preplanning of measures for control of runoff prior to site development; limiting the area which can be uncovered at any one time; requiring stabilization of soils at the earliest practicable time; and elimination of construction litter at the site. These regulatory actions can be efficiently applied to privately undertaken construction through use of building codes, subdivision and grading ordinacnes and other locally available programs. Public facilities construction by municipalities and counties is presumably subject to control whether done directly by a local agency or accomplished by contractor. In the latter case, adequate control could be assured through contractual requirements.

Major problems involve the extent to which construction activities of state and federal agencies can be effectively regulated. Numerous executive orders have been issued directing federal agencies to review and conduct their activities to assure they do not cause environmental degradation. Where this executive authority is not effective, local action is limited to assuring that very specific arrangements are negotiated with federal agencies for coordination of their actions with objectives of the areawide plan. The Environmental Impact Statement required by NEPA[10] provides an early warning of impending construction but does not provide a sure means of pollution control. Workable arrangements for coordination between local and federal agencies will be enhanced by the aggressive participation of state agencies.

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[9] U.S. Environmental Protection Agency; *Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity*, Washington, D.C. 1973.

Construction by state agencies seeking to maximize the accomplishment of their mission within available funds may give less than full attention to water quality control, particularly if abatement measures are expensive. Certification of the areawide plan by the Governor, accompanied by issuance of an executive order or other action calling the plan to the attention of executive agencies, may be adequate in some states to establish a basis for obtaining compliance. However, in other states, agencies having important construction programs are accountable only to the legislature and have great discretion in their actions. Short of legislative action to recognize the areawide plan and direct compliance, no effective means of controlling their construction activities may exist.

Identify and Control Salt Water Intrusion - The identification of the occurrence and extent of salt water intrusion is dependent on investigations which include:[11]

- spatial delineation of primary aquifers and streams;
- analysis of historical water quality data for suspect areas;
- establishment of salinity monitoring networks for surface and ground water;
- monitoring the location of the fresh water/salt water interface; and
- basin wide hydrogeologic investigations to identify causal factors.

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[10] Sec. 102, National Environmental Protection Act, Public Law 92-190.

[11] U.S. Environmental Protection Agency; Identification and Control of Pollution from Salt Water Intrusion, Washington, D.C. 1973.

The extent to which regulatory programs and structural measures are useful in control of pollution due to salt water intrusion depends on the conditions causing the intrusion. The most frequently encountered causes of salt water intrusion include: lowering of the ground water level in coastal aquifers by overpumping, natural drainage, or reduction of natural recharge; deepening of navigation channels and construction of sea level canals; reduction of stream flow by diversions, withdrawals, or upstream land development including ground water pumping; and interaquifer transfer through wells and other penetrations or as a result of induced changes in the hydrologic pressure regime.

Control methods for salt water intrusion include both structural and regulatory methods. However, intrusion may not be a localized problem. Coastal intrusion generally extends over wide areas and maintenance of fresh water stream flow may involve management of withdrawal, recharge, and storage far upstream. Local agencies usually lack sufficient broad geographic jurisdiction to mount an adequate program to achieve control. Where upstream federal water development and navigation projects cause salt water intrusion into estuaties, state agencies, particularly those with responsibility for water resources planning and management, will need to coordinate and perhaps direct or undertake corrective action. Actions by local agencies may include control of land use or limitation of pumping.

Control of salt water intrusion is complicated by vested water rights and extensive investments by the United States, the states, local agencies and private interests in projects and activities that contribute to intrusion.

Structural measures for control of salt water intrusion include artificial recharge of ground water; maintenance of fresh water ridges, extraction barriers, and combinations of both; installation of tide gates, and releases from upstream storage to provide adequate fresh water inflows to estuaries. Few of these structural measures will generally be a part of waste treatment management plans. Therefor their consideration is not mandated by Sec. 208.[12]

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[12] Sec. 208(b)(2)(I) requires that areawide plans set forth procedures and methods to control salt water intrusion only when such procedures and methods are otherwise a part of the waste treatment management plan.

Structural and/or regulatory measures for correction or stabilization of salt water intrusion require some sophistication in the conjunctive management of ground and surface water resources. Consideration of factors other than water quality control will be required. Implementation of comprehensive plans for control of salt water intrusion will be beyond local authorities both geographically and functionally. Action by the state and/or by the United States will be necessary.

Control the Deposition of Residual Wastes - Residual wastes include sewage sludges, incinerator ash, and other solids remaining from treatment and disposal activities of all types.

Disposal generally is at a solid waste disposal site. Disposal site suitability and control of disposal practices are the same as those for disposal of other solid wastes. Odors, flooding, leaching, and sanitation must be considered. Little difficulty should be encountered in this aspect of the areawide plan if an adequate system presently exists for disposal of other solid wastes. Subject to certain state requirements to avoid flood plains or other unsuitable areas, local governments have traditionally had considerable latitude in arranging for solid waste disposal. Since the major participants in site selection are essentially the same governments comprising the designated planning organization, no major problems should be involved.

Control the Disposal of Pollutants on Land or in Subsurface Excavations - Ultimately, most pollutants not directly entering receiving waters are disposed of in some fashion involving placement either on the land, in shallow excavations or in wells of varying depths and capacity. Pollution of both ground water and surface water can result from improper disposal.

Ground water becomes polluted when the natural filtering system of vegetation, soil, sand, gravel, and rocks is bypassed or overwhelmed by polluting substances or when the hydraulic or chemical balance in subsurface strata is altered so that polluting substances move within or between aquifers.[13] Pollution of surface waters occurs due to placement of wastes in or adjacent to streams or by inflow of ground water polluted by improperly placed wastes.

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[13] U.S. Environmental Protection Agency; Ground Water Pollution from Subsurface Sources, Washington, D.C. 1973.

Control of waste disposal in and on the land must include regulation of wells used for injection of industrial wastes, gas storage, and petroleum exploration and production including dryholes and abandoned wells; lagoons, basins, and pits; septic systems; landfills; sewer leakage; and tank and pipeline leakage; The objectives of regulation are to minimize the possibility of leaching, leakage and breakage; insure proper site selection, and use of the least dangerous disposal techniques appropriate to the situation.

Local agencies have adequate authority to control some private and most local governmental activities. However, control of pipelines and major utilities is difficult to exercise at the local level and best left to state or federal regulation. Local agencies will also be stymied in dealing with pollution of ground or surface waters when offending disposal practices occur on state or federal lands, or when the occurrence is not within the designated planning area.

State Requirements

No examples of state-imposed requirements for areawide waste treatment management agencies were found in this investigation. Planning pursuant to Sec. 208 is still embryonic, and state agencies responsible for supervision of the areawide waste treatment management planning program have not yet had to certify or refuse certification of a specific areawide plan. As plans are submitted for certification, reviewing agencies will consider the effect on the state's interests of the institutional and financial management plans developed.

The participation of states in areawide waste treatment management planning is required by the Act under cetain circumstances and highly desirable in all cases. Local planning agencies may now allocate a substantial portion (up to 8 percent) of planning grants to state agencies through sub-contracting to support state participation in the planning effort. A knowledgeable approach to plan certification and provision of assistance in coordinating implementation requires that state officials be thoroughly familiar with the plan and its method of development. If state participation in the areawide planning process is not begun early and maintained on a continuous basis, long delays may be required to review plans which are submitted and to assure their consistency with state requirements and with other plans including those developed pursuant to Sec. 303(e).

State certification requirements, when formally established or informally applied, may not necessarily be legalistic in nature. Some management structures may be desirable because they achieve uniformity among several planning areas, produce economies of scale in state or local operations, permit maintaining centralized control over technical and/or fiscal management, and provide a degree of coordination with other programs.

The state's view of the appropriate level of responsibility assumed by a local or regional entity will be particularly influenced by the perspective of the state agency, if any, assigned the task of overseeing development of areawide waste treatment management plan. State agencies with functions limited to water pollution control will be less inclined to question local arrangements featuring the creation and/or use of special purpose districts limited to water quality control purposes. On the other hand, legislatures are increasingly restructuring governmental organization and assigning broad responsibilities for management and control of water and other natural resources to single state agencies. Depending somewhat on the organizational level at which any agency activities related to areawide planning are supervised, such agencies will be more likely to view implementation of the areawide plan--with all of its complexities--as only one part of a coordinated sub-state system for the multi-purpose management of water or land and water resources. In this event, state preferences as to institutional arrangements for areawide waste treatment management will be influenced by how strongly institutional alternatives also support goals other than water quality control. Such preferences will favor the exercise of local management responsibilities through fairly large and strong areawide units combining responsibility for waste treatment management with other activities such as flood plain management, water supply development, utility services, and comprehensive planning.

Local Requirements

Since the planning organizations designated to prepare areawide plans must include representatives of area governments [Sec. 208(a)(2)], plans forwarded for state review will necessarily be satisfactory at the time to a majority if not all of the involved governments.

Meaningful concensus on an areawide plan will require consideration of the concerns of individuals and organizations. Some of these concerns, particularly in larger metropolitan areas with highly developed governmental structure, will parallel those cited in the discussion of state requirements, and may, in fact, be more specific and stringent.

Other local concerns, motivated by a desire to maintain effective control at the lowest governmental level and to simultaneously minimize local costs, may conflict. As stated by Anderson, "The simple fact is that the American people have desired two things which seem to be incompatible. One is complete local self government in a system of small units coming down from earlier days; the other is a standard of services higher than ever before and a distribution of expenses over wide areas, so that no local area, especially not a poor one, will be unduly burdened."[14/] Other factors may also enter into decisions and become real, although invisible, institutional criteria including:

- desire by incumbent officials to maintain all existing districts, boundaries, boards, and other arrangements;
- preference for locating potentially unpopular taxing or regulatory programs with another body or level of government; and
- insistence on particular procedures for cost sharing thought to have special benefits or to produce favorable results.

These concerns will be troublesome to overcome particularly where planning is assigned to an organization dependent upon local support for continued viability.

The existing local circumstances may also require certain characteristics to be built into the management institutional structure. For example, the Act requires management agencies to have the authority to "..*manage*

[14/] William Anderson, Local Government and Finance in Minnesota 1935. p. 327.

effectively waste treatment works;;" [Sec. 208(c)(2)(B)]. Most agencies presently operating waste treatment works probably have adequate authority for doing so but this does not assure administrative and technical capability and/or an effective level of funding. Where chronically poor management of facilities exists, a need for "new management" to place a higher priority on efficient operation may be indicated. If, however, it is not politically desirable to "take over" all facilities, then a management structure offering some flexibility may need to be tailored to fit the local situation.

Considerations Affecting Planning

The areawide planning process developed pursuant to Sec. 208 is to be a continuing process which will provide at least for an annual updating of the initial plan and the analysis of alternative waste treatment systems. In the case of agricultural, silvicultural, and mining related sources of pollution, continued planning will be required to complete the identification of sources and to set forth procedures and methods of control. Institutional and financial approaches to waste treatment management will also require further study and improvement and experience is gained and faults are exposed.

Planning is essentially a management function, and, when completed, affects decisions on the purpose, nature and priority of operational programs, and the expenditure of funds. The complex planning required to update and refine areawide plans and facilitate their coordinated implementation can not be effectively accomplished if planning responsibility is fragmented on either a geographic or functional basis.

Establishment and maintenance of a continuous planning program places a premium on continuity of experienced individuals and of organizational units. Practicality may argue in favor of assigning future responsibility for areawide waste treatment management planning to the organization responsible for the initial plan development because of its early and intensive experience. However, realistic planning requires exposure to and understanding of operational problems. Thus the experience of agencies implementing the facilities and regulatory parts of the plan may be of equal value. Continuity requires the dependable availability of adequate funds to support staff and to avoid interruption to data collection efforts.

Plannng should be comprehensive at least in its consideration of all water quality control related factors. Agencies with limited purposes and authorities can not develop balanced plans or assess the best allocation of funds for supporting activities. Facilities management agencies, for example, pressed for immediate action and needing specialized information, may place little value on the allocation of available funds for the collection of information or planning efforts not of immediate assistance in resolving the problem at hand. Similarly, such agencies may tend to favor structural solutions based on past experience and may not adequately consider regulatory alternatives.

Revisions to the approved plan as found necessary will be developed through the continuing planning process. The guidelines[15] anticipate modifications to the initial plan and permit minor changes to be presented as an addendum to the plan rather than the more comprehensive revision of the plan document. Grant regulations[16] specify that revised or amended plans are to be submitted for review in the same manner as original plans. That is, certification and submittal by the Governor and approval by EPA is required.

The assignment of responsibility for the continuing planning process must be made to an agency designated pursuant to Sec. 208(a) if federal funds are desired to support the continuing planning process [Sec. 208(f)]. Even if the originally designated planning organization is replaced, the requirements of Sec. 208(a) assure nearly the same organizations will be represented in plan revisions and updating as were involved in development of the initial plan. The Act and the guidelines do not provide specific guidance regarding the approvability of other assignments of responsibility for continuing planning. Acceptable techniques may exist whereby eligibility for the 75 percent federal support of the continuing planning process may be maintained while the day to day work of planning is carried out by one or more otherwise ineligible agencies operating

[15] U.S. Environmental Protection Agency, Draft Guidelines for Areawide Waste Treatment Management; Washington, D.C. 1974.

[16] U.S. Environmental Protection Agency, Areawide Waste Treatment Management Planning Agencies; Interim Grant Regulations; Washington, D.C. 1974.

under a contract or another suitable arrangement with a designated agency. In most cases, the potential loss of federal funds and the experience of developing the initial plan will induce assignment of the continuing planning process to the originally designated organization.

Considerations Affecting Regulatory Programs

The mandatory inclusion of certain regulatory programs in an areawide waste treatment management plan constitutes one of the major departures of the Act from previous legislation encouraging or requiring water quality planning. Regulatory programs considered or included in past plans have generally been limited and dependent upon state level implementation.

Regulatory programs and other non-structural techniques such as taxing policy offer a means to accomplish, at a comparatively low cost for administration, abatement of types of pollution which could not be practically achieved financially or technologically by structural means. There may be, of course, substantial costs involved for those regulated. Regulatory programs characteristically attack problems much closer to their source than structural programs which frequrently are limited to providing "end-of-pipe" treatment. However, the authority to regulate, under the police power of the state or otherwise, is a basic governmental power and its use is frequently fraught with controversy. Regulation involves limiting individual choice and is sometimes bitterly opposed as an infringement on personal rights. Winning acceptance of land use regulations is particularly difficult in rural areas where landowners have traditionally been permited great freedom in land management practices.

In extreme cases, changes required to comply with regulatory programs may make present operations inefficient and result in economic or social changes which were unintended and unanticipated. Many regulatory programs require intensive technical evaluations on a frequent basis for their proper operation. Even if this is not anticipated, however, detailed technical investigations may be required prior to their implementation to fully identify and evaluate potential impacts.

Generally, acceptance of regulatory programs by local officials and the public is most likely if program administration is at the lowest possible level to insure understanding of local circumstances and "reasonableness" in action. However, assignment of similar regulatory responsibilities to a large number of smaller units of government practically assures the non-uniform treatment of area residents. In addition, special interests may make it difficult for some local units of government to carry out programs.

Some regulatory activities are not well adapted to local implementation. Where sources of pollution are widespread, or upstream of a designated area, local agencies do not have geographic jurisdiction to carry out needed control programs. Where specialized expertise is required, state regulation may be necessary.

FINANCIAL ASPECTS

The costs for implementing areawide plans pursuant to Sec. 208 will be large, and financial planning will be required to assure successful implementation.

To insure that financial planning is not overlooked, the Act requires that an areawide plan include a program to provide the necessary financial arrangements for the development of treatment works required to meet the anticipated municipal and industrial waste treatment needs of the area over a twenty year period. More generally, it requires the identification of the measures necessary to carry out the plan, including financing. This latter requirement, a part of Sec. 208(b)(2)(E), extends the need for financial analysis beyond that necessary for the facilities portion of the plan and compels consideration during planning of the financial requirements for carrying out portions of the plan dealing with regulatory programs and future planning.

As a minimum, the financial studies carried out in support of a particular areawide plan must be sufficient to identify the full cost which will be incurred over time for implementing the plan, the allocation of cost among governmental levels and specific parties or classes of parties, the capability of meeting these allocated costs, and the procedures for meeting the costs as they arise. The investigations preceding selection of the financial plan for implementation must also ascertain that the authority exists for carrying out a particular alternative, and that it meets any applicable requirement established by the Act or otherwise. Desirably, the consideration of the financial approach to areawide waste treatment management should go beyond the examination of legal requirements and authorities, and also assess the desirability of any alternative in terms of its practicality and effectiveness.

Most identifiable costs associated with implementing areawide plans will be for:

- construction of new facilities and purchase and/or modification of existing facilities;
- operation, maintenance, and replacement of existing and new facilities;
- administration of regulatory programs;
- future updating, refinement, and extension of the areawide plan;
- provision of coordination and management.

Included in the above are costs for monitoring, overhead, and enforcement. Additional costs, which may be less apparent but of significance include those associated with subsidies, economic incentives, tax adjustments and other actions taken to effect or encourage the abatement of pollution.

To meet these costs an areawide plan may propose:

- issuance of revenue and/or general obligation bonds or other devices for borrowing money;
- levying ad valorem or property taxes;
- making user charges;
- establishing and collecting permit charges;
- levying fines;
- intergovernmental contracting; and
- executing long term repayment contracts.

Studies will be required to determine which are authorized by law, consistent with the Act, and acceptable to state and local officials. Even with these constraints, however, considerable flexibility may remain for design of a financial approach to areawide waste treatment management, and some potential approaches may be preferable to others. An examination of legal authority may be inadequate to insure the practicality or efficiency of a particular approach or enable thorough comparison of alternative approaches.

Capital Costs

In most areawide plans, the greatest portion of the implementation cost in the short term will be for capital expenditures. The Act provides for federal grants of up to 75 percent of the cost of construction of treatment works subject to certain conditions, including repayment of industrially-related costs. Of the remaining non-federal cost, state programs provide varying percentage amounts but generally are such that only a relatively small share of the overall capital cost must be financed by local government.

Financing of the local portion of capital costs is normally provided through the issuance and sale of whatever bonds may be authorized for use by the management agency. Financial investigations of arrangements for meeting capital costs must include identification and consideration of:

- constitutional limitations;
- statutory limitations;
- present indebtedness and remaining capability;
- impact on tax rates; and
- availability of state cost sharing funds and priority for their allocation.

Many state constitutions contain provisions regarding the amount of public debt that may be incurred and/or maximum allowable tax rates which may be established by various governmental entities. In other cases, limitations may be embodied by statute. The total indebtedness permitted any governmental body may be stated as a single amount for all purposes or may be set for various purposes. Legislatures have frequently recognized the need for certain important programs by enabling the exclusion of debts or taxes for a particular purpose from otherwise applicable limits. Where such limitations exist, provision of funds for meeting capital costs may require legislative and/or public action to modify constitutions or statutes or to create quasi-public authorities not subject to the particular limitations which exist. It is unlikely that any of these courses of action could be implemented quickly or without controversy.

When the total permitted indebtedness is determined, either for water quality control purposes alone or for whatever other aggregation may be appropriate, an analysis of its relationship to the presently existing indebtedness indicates the incremental level of additional debt which might be assumed. This analysis is far more complicated than a simple comparison of two values. It must consider the time patterns of the need for funds for all appropriate purposes (not necessarily limited to water quality control) and the repayment of presently outstanding bonds or other reductions in debt. In addition, techniques to modify the form of debt, extend the time of repayment or otherwise affect remaining debt capability, are available and require evaluation.

When debt limitations are established in a broad form applicable to purposes other than water quality control, the future costs will include those for other urgent programs of major scope. Complete analysis requires a closely integrated effort with those responsible for planning and implementing other programs.

Most state legislatures have established programs by which a portion of the non-federal costs of construction of treatment works may be paid by the state. However, the existence of such a program must be supplemented by appropriation or other provision of adequate funds to accomplish the intended purposes. Where the funds available for state cost sharing are not sufficient to meet all needs, then the procedures for establishment of priorities for their allocation must be examined.

Even if investigation indicates that none of the above loom as obstacles to capital financing, the actual salability of bonds should be examined. Difficulties may be encountered due to the effect of limits on paid interest, overlapping debts incurred for other purposes, or community credit. These latter difficulties may be partially or wholly overcome by the existence of the Environmental Financing Authority established by Section 12 of the Act. Certain states have also provided a mechanism for insuring the salability of local bonds. It is important however, to recognize that the legal authority to issue bonds of a particular type or types does not necessarily guarantee the capability to meet capital costs.

The Act includes certain provisions concerning the arrangements for financing the non-federal portion of capital costs. Sec. 204(b)(1)(B) states that as a condition for receiving a federal grant for treatment works, the applicant must have:

> *..made provision for the payment to such applicant by the industrial users of the treatment works, of that portion of the cost of construction of such treatment works (as determined by the Administrator) which is allocable to the treatment of such industrial wastes to the extent attributable to the Federal share of the cost of construction.*

While requiring arrangements for recovery of some capital costs from industry, the Act is silent as to how those or other costs are to be obtained. The federal share of the capital costs to be incurred to provide treatment of industrial wastes may presumably be collected in a lump sum from particular industries, a special payment over time or as an increment of user charges. Few industries would prefer the first alternative, and, if required, would remove a portion of the incentive for major industries to join with municipalities in the treatment of wastes and gain the economies of scale obtained thereby. The choice between the latter two possibilities is less clear and either may be acceptable in some circumstances. A decision as to which approach is preferable and the detail of application may depend on a number of factors including but not limited to:

- proportion of the overall capital costs allocable to industries and total amount of industrial costs to be recovered;

- number of industries; and

- uniformity in volume and character of industrial waste flow.

In areas where a large number of industries exist and the continuity of industry is relatively well assured, recovery of the industrially-related capital costs can probably be satisfactorily approached by treating industry as one or more classes rather than individually. This would permit the inclusion of an amount for capital cost recovery with user charges. Where only a few industries contribute waste to the system, more specific arrangements may be required to assure that the loss of any particular industry will not jeopardize cost recovery. In either case, the procedure for assessing the amount of cost to be recovered from any particular industry or class of industry will be controversial. The basis for capital cost assignment should be directly related to the cost of construction of the waste treatment facilities and not confused or mingled with those affecting the cost of operation.

Some states have requirements regarding the financial alternatives to meeting capital costs. Most, if not all, states provide a program of grants to local waste treatment management agencies to assist in facility construction. While few of these programs address specifically the financial concerns of an areawide plan, requirements established as conditions for state participation in individual projects may affect the overall approach chosen.

In addition to selection of procedures for recovery of industrial cost, the overall distribution of capital costs among all participants is significant. Use of general obligation bonds permits use of general tax funds, revenues from waste treatment, or other activities for repayment. Revenue bonds are limited in the source of funds for their redemption to revenues from the use of facilities. These types of financing can effect different patterns of responsibility for repayment which may or may not be desired.

Use of general tax funds to repay capital costs, coupled with special provisions for recovering industrially-related costs, places a double burden on industry.

Individual industries, depending on their allocated share of capital costs, may elect to accept the charge and discharge wastes into the municipal system for treatment, provide their own treatment, or as a last resort, terminate operations. In a planning area where one large industry provides a significant share of the total waste to be treated, this private decision will be of substantial importance in the overall plan. Similarly, the options of communities to join or not to join in regional schemes for waste treatment provides each a lever to use in negotiations on cost allocation. Individual landowners, groups of landowners, and governmental agencies at all levels, are also important participants in the cost allocation procedure.

Analysis of the engineering aspects of the areawide plan should be concurrent with evaluation of the financial approaches to implementation. The number of interests, each with multiple options at their disposal, may induce an element of "game playing" in the assignment of capital costs which will prove difficult to control. Designated planning organizations must include representatives of local governments. This assures that each affected governmental unit will have the opportunity to explore various options before agreeing to a particular plan. In some cases, the state can be a necessary party to negotiations as an arbiter with the strength imparted by its authority to finally accept or reject the plan, issue or deny discharge permits and establish conditions therefor, and control of state funding for water quality control and other purposes.

Operation and Maintenance Costs

Over time, the costs for operation and maintenance of waste treatment facilities may equal or exceed the capital costs associated with their original construction or acquisition. The Act requires that applicants for federal grants for construction of publicly owned treatment works must have:

> ..*adopted or will adopt a system of charges to assure each recipient of waste treatment services within the applicant's jurisdiction, as determined by the Administrator, will pay its proportionate share of operation and maintenance (including replacement) of any waste treatment services provided by the applicant* [Sec. 204(b)(1)(A)].

The mandatory inclusion of replacement costs within the system of treatment charges increases the importance of those costs and the procedures developed for their allocation.

An additional federal requirement regarding the distribution of the costs is implicitly included in Section 208(c)(2)(G) which requires the designated management agency or agencies to have adequate authority:

> ..*to assure in implementation of an areawide waste treatment management plan that each participating community pays its proportionate share of treatment costs.*

These sections of the Act require the assignment of costs in some fashion producing a measure of equity. *"Participating communities"*[17] must pay their proportionate share of treatment costs and *"each recipient"* of waste treatment services must pay its proportionate share of the costs of operation and maintenance. Presumably any system meeting the second criteria would automatically meet the first but the reverse is not necessarily true.

At point is the question of the basis for establishment of rates, tolls, or other charges. Costs of operation and maintenance for treatment of a unit of waste depend on:

- treatment work characteristics including type, size, efficiency, and age;
- area served including length and size of the collection system required, terrain, elevation and soils; and
- volume and character of wastes.

Cost will also result from operating, maintaining and, replacing facilities other than wastewater treatment plants.

Meeting criteria of the Act could be reasonably easy in the case of treatment works serving a single municipality or other whole area. However, if regionalization is planned, many of the same considerations involved in allocation of capital costs arise. Most systems for assignment of operation and maintenance costs will be required to consider more than just the volume and character of wastes. Each participating community can be expected to ask for inclusion of any factors in the decision which may work to its advantage and in the aggregate, surface a large number of important points, all of which require explicit and detailed consideration. Planning organizations will need to have available detailed records of operation and maintenance costs for existing facilities and well prepared estimates of costs for new facilities as a guide to reaching sound decision.

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[17] Communities is undefined in the Act and may be open to interpretation. It may not necessarily mean municipalities or another area circumscribed by legally established boundaries.

In those states having statewide agencies responsible for rate setting, some decisions may be beyond local control. Where no such authority exists, "game playing" will arise as in the case of capital costs. Again, the participation of a state agency will be desirable to assist in resolution of the formula for cost assignment.

Regulatory Program Costs

The cost of carrying out the regulatory portions of an areawide plan will depend on the nature and purpose of the program and the degree of surveillance and enforcement required. Regulatory programs that are closely allied to existing activities of proposed management agencies will be more readily instituted and continued than new programs requiring new staff, equipment, and/or facilities.

Once needed regulatory programs are identified, the financial approach to their implementation must consider the procedures for providing the necessary funding and the desired distribution of costs. Available sources of funds include:

- general governmental funds;
- revenues from waste treatment; and
- fees or fines of various types.

The assignment of responsibility for carrying out regulatory programs, as well as the source of support therefore, affects the distribution of cost and the dependability of necessary funding.

Where appropriate, assignment of regulatory responsibilities to the state results in the minimum local cost but generally removes control from the hands of local officials. In the case of some programs, this is desirable to insure that local sensitivity to future controversy does not result in negation of regulatory action by budget cutting.

Use of revenues from waste treatment user charges for support of regulatory programs can provide a relatively secure source of funds and is encouraged by Section 201(e) of the Act which states:

> *The Administrator shall encourage waste treatment management which results in integrating*

> *facilities for sewage treatment and recycling with facilities to treat, dispose of, or utilize other industrial and municipal wastes, including but not limited to solid waste and waste heat and thermal discharges. Such integrated facilities shall be designed and operated to produce revenues in excess of capital and operation and maintenance costs and such revenues shall be used by the designated regional management agency to aid in financing other environmental improvement programs.*

However, such an arrangement can, in effect, penalize a particular group, such as urban residents or industries, to conduct programs with application and benefit in rural areas and/or for control of pollution sources beyond their power to correct.

Planning Costs

Provision of up to 75 percent of the annual cost for maintaining the areawide planning process on a continuing basis is provided for by Section 208(f)(2) of the Act. The remaining non-federal portion of planning costs should not be large in comparison to financial capability since designated areas are of substantial size. The general sources of the non-federal cost of future planning include:

- state grants;
- revenues; and
- assessment of area governments.

As in the case of regulatory programs, reliance upon state funding minimizes local cost, but has implications with respect to control. The aspects of control are less important than in the case of regulatory programs, however, since the state can effectively influence the end result through the certification process.

The use of revenues from facilities operation to support planning poses a potentially more serious question of loss of control at the local level. In addition, use of revenues for planning places the entire burden of planning costs on facility users. This may produce inequities in areas where a substantial portion of future planning will necessarily be devoted to study and control of nonpoint sources of pollution.

A more appropriate distribution of costs could be provided by meeting planning costs from assessment of a broad range of governments within the area or the combined use of assessments and revenue. However, care is required to assure that the assessment can be carried out and funds actually obtained.

Considerations Affecting Monitoring Costs

Monitoring will be required for determination of the volume and character of wastes generated, treated, and discharged. Depending on the number and nature of waste discharges in the designated area, monitoring costs can be large. If handled as an operational cost or a general overhead cost, the expenses of monitoring may be equally distributed among all users or, by differential rates, to classes of users. However, where certain individual industries account for a significant portion of the total waste flow or have waste flows which are highly variable in volume or constituency, an inequity is produced by distributing the larger cost of monitoring such sources among other parties. Requiring self-monitoring by such industries offers one means of avoiding that inequity.

CHAPTER 4
THE CASE STUDIES

This Chapter describes the case study area factors which affect the relevance of the recommendations in Chapter 2, to other areas with similar conditions.

The three study areas were chosen to provide a range in terms of water quality problems, locations and existing institutional frameworks. Descriptions of the case study areas do not follow an identical format because each features that information which best characterizes the area and influences the potential approaches to waste treatment management as envisioned under provisions of Sec. 208. The detail of the description of the area, the existing water quality problems and the available institutional and financial alternatives varies with the information that was available in each area.

YOUNGSTOWN-WARREN, OHIO AREA

GENERAL DESCRIPTION

The Youngstown-Warren designated planning area comprises Mahoning and Trumbull Counties, located in northeastern Ohio. The area includes some 1,030 square miles and a resident population of 537,000 persons (1970). Approximately 70 percent of the population lives in the immediate Youngstown-Warren urbanized area. Figure 1 shows the principal features of the area.

The planning area is in the central part of a major metropolitan area which is economically, socially and demographically diversified. Manufacturing is concentrated in the larger cities of the area.

The population of Mahoning and Trumbull Counties has grown since the earliest census. The 1970 populations of the principal cities within the area were:

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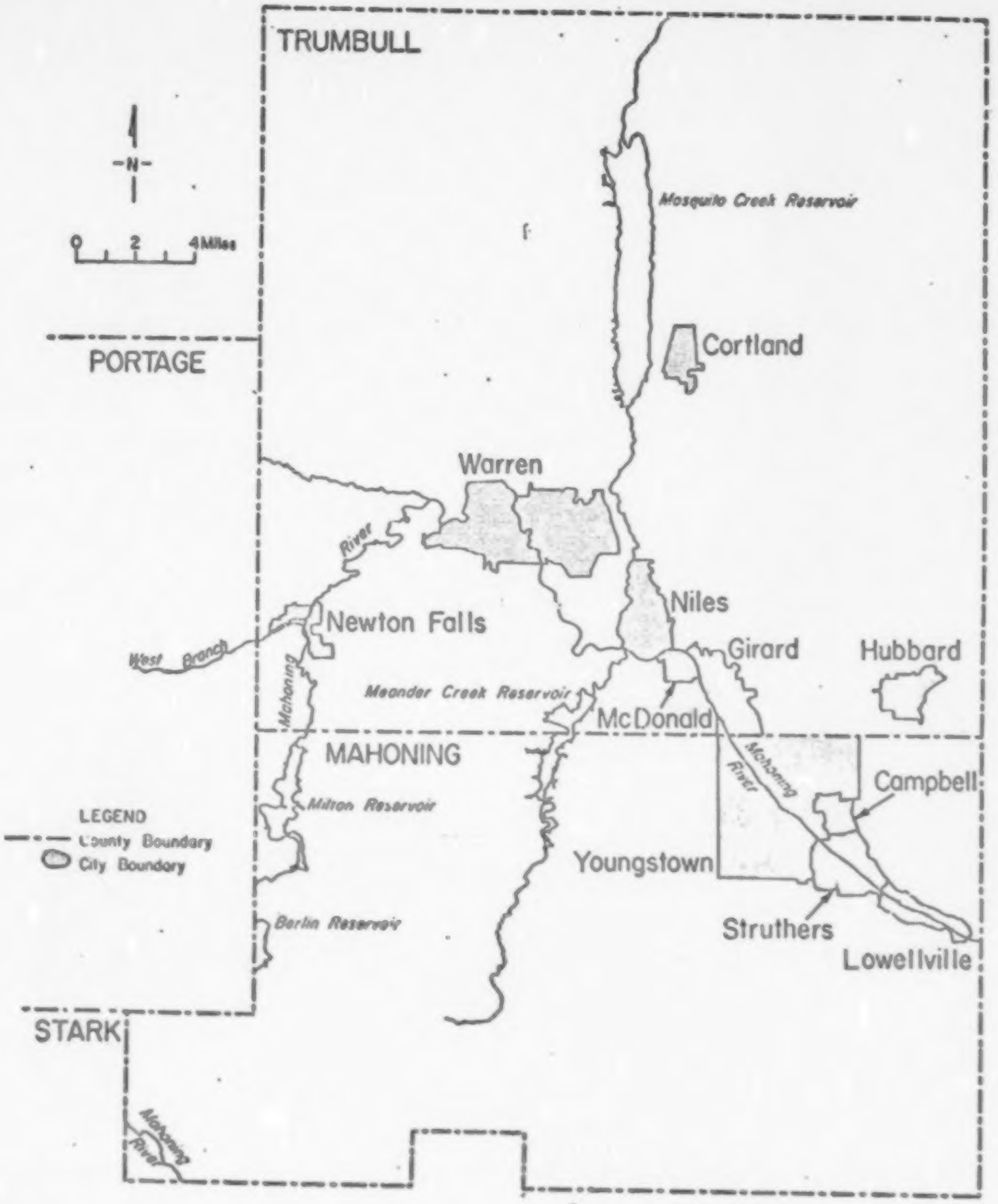
TRUMBULL
-N-
0 2 4 Miles
Mosquito Creek Reservoir
PORTAGE
Cortland
Warren
River
Niles
Newton Falls
West Branch
Girard
Hubbard
Mahoning
Meander Creek Reservoir
McDonald
MAHONING
Mahoning River
Campbell
Milton Reservoir
LEGEND
County Boundary
City Boundary
Youngstown
Berlin Reservoir
Struthers
Lowellville
STARK
Mahoning River

Figure I
Youngstown, Warren, Ohio Area

Campbell	12,577	McDonald	3,177
Canfield	5,484	Newton Falls	5,378
Cortland	2,525	Niles	21,581
Girard	14,119	Struthers	15,343
Hubbard	8,583	Sebring	4,954
Lowellville	1,836	Warren	63,494
		Youngstown	140,909

Projections of future population are based on an assumption of continued moderate growth at somewhat less than the national average.

The area is characterized topographically by rolling hills of moderate size and a well developed stream system in which the valleys are filled with thick deposits of clay and fine sand. The area receives an average annual precipitation of approximately 35 inches which is well distributed throughout the year. The climate, soils, and topography of the area are reasonably well suited to agriculture.

Economy

The nature and extent of the local economy is important both to the pollution problems encountered in the Youngstown-Warren area and to selection of the institutional and financial options for waste treatment management. Principal economic activities include manufacturing, transportation, agriculture, and mining.

Approximately 44 percent of the area's employment is in manufacturing. This is far above the national average and because of this heavy dependence, national and regional trends in manufacturing employment and growth are magnified in the area. Until very recently, total employment in the area increased since 1967 at a substantial rate. Present trends indicate that an increasing share of employment will shift from manufacturing to other sectors, particularly the services. While this shift is expected to lessen the area's dependence on manufacturing, that sector will probably continue to dominate the local economy for the foreseeable future.

The primary metals industry, including steel, is the largest manufacturing employer. At one time, more steel was produced within the Youngstown corporate limits than any other city in the world. Youngstown, however, is now only a concentration in a 25 mile line of steel mills that extends from northwest of Warren to beyond New Castle, Pennsylvania, and into the Shenango Valley beyond Sharon, Pennsylvania. This larger region, designated as the Youngstown Steel District, is the fourth largest steel producing area in the nation after Chicago, Pittsburgh, and the Northeast Coast.

Most of the basic steel in the area is produced in Youngstown, principally by Youngstown Sheet and Tube, Republic Steel, and United States Steel. Other Mahoning Valley cities with blast furnaces, steel works, and rolling mills are: Warren, with Republic Steel and Copperweld Steel; McDonald, with United States Steel; and Campbell and Struthers, with Youngstown Sheet and Tube. Newton Falls, Niles, and Girard also have primary metal industries of some type within their corporate limits.

Over time, several users of steel have moved into the valley. Machinery, automobile parts, electric motors and other electrical equipment, road building machinery, boilers, kitchen equipment, metal furniture and other major items requiring steel are now produced in the region. Also, several units of the nonferrous metals industry have located in the area.

A high level of transportation activity is generated by the movement of raw materials, basic products, and by-products of the steel industry. Three-fourths of the coking coal is from western Pennsylvania; a tenth is from West Virginia. Six million tons of coke are consumed by the mills annually and the mills have their own coke ovens. Three million tons of limestone are consumed annually. Nearly all of the limestone is from eastern Ohio and western Pennsylvania. The furnaces also consume great quantities of scrap, most it shipped from other scrap-producing districts.

The agriculture of the area is principally dairy farming mixed with truck, fruit, livestock, poultry, and general farming. More than one-half of the total farm land is cropland. Pastureland is the next most common agricultural land use. About one-fifth of the total farm income is derived from the sale of fruit, vegetables or special crops such as nursery stock, flowers, winter vegetables grown in greenhouses, and other greenhouse crops. Corn, wheat, oats, and hay--the largest crops in terms of acreage--are used mostly for dairy livestock and chicken feed. Farms in the area are of moderate size. In some areas there are extensive continuous cultivated fields with only small amounts of woodland or grassland. Agricultural employment in the area is small and is declining slightly.

Local mines were once an important source of coal and ore and numerous mines were worked. However, there is little mining activity in the area now and total mining employment is only a few hundred persons.

Existing Water Resources Development

The surface water resources within the designated planning area are fairly well developed and regulated in terms of quantity. Several reservoirs have been constructed and are operated for water supply, low flow augmentation, and other purposes. Management of the existing reservoirs is provided by various entities including cities, sanitary districts, the Corps of Engineers, and private utilities. The major hydrologic features of the area are shown in Figure 1.

Ground water is available in the area but yields are highly variable and dependent on location. While many minor water supplies are obtained from ground water, there has been no large scale development of the resource in the area.

Water Quality Problems

The Mahoning River, the major water resource in the area, is seriously polluted. Minor ground water quality problems also occur in several locations. The principal sources of waste in the designated area in order of the significance of their impact on water quality are considered by local officials to be:

- municipal and industrial effluents including thermal loads;
- urban storm water runoff;
- mine drainage and other mining induced pollution; and
- agricultural practices.

The latter three problems are thought to be of far less consequence than municipal and industrial point source discharges.

Municipal Wastes - Nine treatment plants along the Mahoning River from Newton Falls to Lowellville provide treatment of municipal sewage. Each of these plants has primary treatment with provision for chemical treatment and is equipped with disinfection facilities. This treatment method removes approximately 50 percent of the organic load. However, large amounts of pollutants still are discharged to the river. The municipal flow from the major sewage treatment plants in the lower Mahoning River Valley totals nearly 50 mgd from an estimated sewered population of 350,000 people.

Industrial Wastes - The industrial wastewater flowing from the major industries in the lower Mahoning River Valley totals approximately 813 mgd discharged through an estimated 600 outfalls. Of this total discharge, cooling water accounts for about 654 mgd.

The major pollutant in the effluents from the area's steel industry is waste heat contained in the cooling water used from blast furnaces, steel furnaces, and rolling mills. Other pollutants include suspended solids, iron, oil, phenols, chlorides, and sulfates. The amount and composition of the waste flows from the several mills in the area vary considerably depending on the type of operation, age of the facilities, and type of waste treatment provided.

In addition to the heat and other pollutants added to the Mahoning River by waste flows from manufacturing operations, there are thermal power generating plants in the area with capacities of 250, 87.4, 53.5, and 45 megawatts and two plants with a combined capacity of 16.4 megawatts. All of these plants use surface water for cooling.

Prior to the augmentation of flows now provided by upstream reservoirs, stream temperatures reached as high as 130°F. Current low flow augmentation practice is to maintain a minimum flow for the main stem of the Mahoning River at Youngstown of 225 cubic feet per second (cfs) during the winter and 450 cfs in the summer. Even with flow augmentation, the increase in water temperature and bacterial count between Warren and Lowellville is significant. Summer stream temperatures as high as 93°F have occurred. This high temperature occurs because industrial water use in the area exceeds the average flow of the river and approximately 95 percent of the industrial water supply withdrawals in the reach between Warren and Lowellville are used for cooling.

Storm Water Runoff - Within the designated planning area, there are some urbanized locations, generally in unincorporated portions of the counties, without storm water collection and treatment systems. Only a few areas within municipalities lack sewers. The impact on water quality from this nonpoint source of waste is unknown.

Some waste treatment facilities in the area lack the capacity to convey and treat both sanitary and storm flows. Frequent overflows occur in those areas having combined sewer systems.

Agriculture - The pollution of waters in the area due to agricultural practices has not been evaluated, but is thought to be significant.

Mine Drainage - At the time the local mines were active, little or no emphasis was placed on rehabilitation or other measures to prevent or mitigate acid drainage and other types of mining-related water quality problems. The extent to which mine drainage from both active and inactive mines contribute to water pollution in the area is unknown but is thought to be significant. Ground water particularly has been degraded in some localized areas due to causes apparently related to coal mining.

EXISTING ARRANGEMENTS FOR WASTE TREATMENT MANAGEMENT

No coordinated system presently exists for waste treatment management throughout the designated area or for a larger region encompassing the designated area. Planning and management of public facilities for waste collection and treatment has been conducted to date on an individual basis by the several cities in the area and the two existing county sewer districts which include all of Mahoning County and all of the urbanized portion of Trumbull County. Numerous industries provide their own treatment of wastes.

Existing Facilities

The more important of the presently existing public waste treatment facilities in the designated area and basic information concerning them are shown in Table 1. Mahoning and Trumbull Counties also own and operate a number of small package plants scattered throughout the counties.

TABLE 1
PRINCIPAL EXISTING PUBLIC WASTE TREATMENT FACILITIES YOUNGSTOWN-WARREN AREA

Location	Owner[1]	Type of Treatment
Youngstown	City	Intermediate[2]
Warren	City	Intermediate
Niles	City	Intermediate
Struthers	City	Intermediate
Girard	City	Intermediate
Campbell	City	Intermediate
Hubbard	City	Secondary
Canfield	City	Secondary
Newton Falls	City	Intermediate
Sebring	Village	Intermediate
Beloit	Village	Intermediate
McDonald	Village	Intermediate
Cortland	Village	Secondary
Lowellville	Village	Intermediate
Craig Beach	Mahoning Co.	Secondary
Mosquito Creek	Trumbull Co.	Secondary

1/ Facility owners also provide operation in all cases.

2/ Primary and chemical treatment.

Regulatory Programs

Ohio statutes provide for various State agencies to exercise regulatory control over solid waste disposal, sewage and waste discharges and other types of pollutants. However, no information was available on regulatory programs of areawide scope or significance presently proposed or enforced in the designated planning area for the primary purpose of water quality management other than the establishment of water quality standards.

PRIOR PLANNING

Water and land resources planning has been accomplished for parts of the designated planning area and for portions of the State or region including the area. Previous plans or planning efforts include those for land use, water resources, water quality, transportation and other purposes.

Land Use Planning

A comprehensive land use plan[3/] has been prepared for the area and adopted by both Mahoning and Trumbull Counties and by Youngstown and Warren, the major cities in the SMSA. The land use plan was developed primarily for facilitating transportation planning and development but should be useful in preparation of the areawide waste treatment management plan.

Water Resources Planning

Prior water resources planning of significant value to the development of the areawide waste treatment management plan has been carried out by the Ohio Department of Natural Resources and by the Ohio River Basin Coordinating Committee. The former organization sponsored and supervised preparation of the Northeast Ohio Water Development Plan[4/] for development and use of water resources in the northeast portion of Ohio including the designated area. That plan has not been formally adopted but is generally accepted as a guide to future water resources development in the area by local, state and federal government agencies. The Ohio River Basin Coordinating Committee supervised the preparation of a generalized framework study[5/] for the entire Ohio River Basin. These past studies provide a reasonably good

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[3/] Future Land Use Plan - 1990; prepared by City Planning Associates, Inc. for the Eastgate Development and Transportation Authority; May 1973.

[4/] Ohio Department of Natural Resources; Northeast Ohio Water Development Plan Interim Report for the Grand, Upper Cuyahoga and Lower Mahoning River Basins; Columbus, Ohio. 1971.

[5/] Ohio River Basin Comprehensive Survey; prepared under the auspices of the Ohio River Basin Coordinating Committee.

factual basis concerning management of the quantity aspects of the water resource in the designated area and its hydrologic relationship to other areas. The Ohio River Basin Commission is engaged in various planning efforts and information developed by the Commission is also available.

A recently completed report[6/] addressed the water supply needs of the communities in Mahoning and Trumbull Counties. In addition, a recent report[7/] detailing demographic and economic projections for the area is available.

Water Quality Planning

The identification of water quality problems in the Youngstown-Warren area resulting from municipal and industrial effluents, and collection of information necessary for their evaluation, is fairly well advanced due to past local, state, and Federal efforts.

EPA has provided waste load allocations for both the steel industries and municipalities along the Mahoning River.

A metropolitan area water and sewer facilities plan[8/] was prepared for the Youngstown-Warren area in 1970 pursuant to previous Federal water quality control legislation but was never certified by the State.

The water quality control portion of the Northeast Ohio Water Development plan provides an inventory of waste sources in the planning area, suggestions for regionalization, and other basic information. Regionalization suggested in the Plan includes joint facilities for Campbell, Lowellville and Struthers; Niles, McDonald and Girard; Warren, Newton Falls and Cortland; and Hubbard and Brookfield. That plan does not envision combining Youngstown's wastes with those of other municipalities.

6/ Floyd G. Browne & Associates Ltd.; Water Distribution System Report, Youngstown, Ohio. 1969.

7/ Battelle Memorial Institute; Final Report on Demographic and Economic Projection for Northeast Ohio: 1970-2020; prepared for Burgess and Niple, Ltd; Columbus, Ohio. 1970.

8/ Mahoning-Trumbull Counties Comprehensive Transportation and Development Study Agency; An Initial Sewer and Water Report for Mahoning and Trumbull Counties; Youngstown, Ohio. 1970.

Waste treatment facilities planning pursuant to Sec. 201 of the Act is now underway in a number of the communities within the area. Planning of collector systems outside municipal jurisdictions was expected to be completed as part of the areawide plan.

APPROACH TO WASTE TREATMENT MANAGEMENT PLANNING

Designation of the Planning Organization

Former Governor John J. Gilligan of Ohio proposed designation of the Eastgate Development and Transportation Authority (EDATA) as the organization responsible for development of the areawide waste treatment management plan in the Youngstown-Warren Standard Metropolitan Statistical Area (SMSA), the designated area, on June 18, 1974. EDATA's designation was approved by EPA on July 18, 1974.

Description of the Planning Organization

EDATA was formed on January 1, 1973 by merger of the Mahoning-Trumbull Counties Comprehensive Transportation and Development Study and the Mahoning-Trumbull Council of Governments. It serves as the regional clearinghouse for reviews carried out pursuant to Budget Circular A-95, as the transportation planning agency in the region and as the areawide planning organization for the Youngstown-Warren SMSA. EDATA is also the designated Regional Lead Organization for Ohio Region 11.

EDATA has an already well organized committee structure and no extensive organizational effort is expected to be necessary.

Jurisdiction - The boundaries of EDATA are coincident with those of the designated planning area and include all of Trumbull and Mahoning Counties. Only one village, Washingtonville, is partially within the designated area.

Prior Planning and Implementation Experience - The members of EDATA and its predecessor organizations have carried out previously several planning efforts including one of major scope in the field of transportation and land use. Planning presently underway, in addition to development of the areawide waste treatment management plan, includes that for water supply facilities, areawide storm drainage and sanitary sewer facilities, housing, open space, and urban mass transportation.

Program Initiation

Both EDATA and its predecessor, the Mahoning-Trumbull Council of Governments, have actively sought designation as the regional wastewater treatment planning agency since July 1972. Before designation as the areawide waste treatment management planning organization in accord with Section 208, EDATA's General Policy Board adopted a twelve-month wastewater engineering program supported with $41,000 of local funds.

The application for funds from EPA was submitted on May 25, 1974 to the Ohio Environmental Protection Agency. Following state and federal review of the original application and supplemental items, EPA awarded a $950,000 grant to EDATA effective July 1, 1974. Funds enabling recruitment of necessary additional staff, engagement of consultants and other financial commitments became actually available in mid-August.

Planning Participants

Participants in the areawide planning process are expected to include, among others, EPA, the Ohio Environmental Protection Agency, the Western Reserve Economic Development Agency, EDATA staff, and representatives of EDATA member communities.

EDATA expects that EPA will periodically monitor the study with regard to direction and progress, and will perform the final review. EDATA does not expect that EPA will be a regular member of committees or provide any specialized technical assistance during the course of the study.

The Ohio Environmental Protection Agency may have membership on various committees. Its principal role, however, as seen by EDATA, is preparation and provision of a basin plan pursuant to Section 303(e) of the Act. EDATA expects that, when available, the basin plan will provide substantial information that will be useful in preparation of the areawide plan. The Ohio Environmental Protection Agency does not anticipate carrying out any specialized studies or providing any other substantial technical assistance to EDATA in formulating the areawide plan.

EPA and the Ohio Environmental Protection Agency are expected by EDATA to participate extensively in plan review, particularly because requirements associated with state certification of the completed plan have not been identified.

The Western Reserve Economic Development Agency will be looked to for coordination of some industrially oriented portions of the planning effort. However, in the case of specific major issues, EDATA plans to work directly with the industries.

STATUS

At the time of the case study investigation, no substantial part of the areawide waste treatment management planning process was underway other than action to supplement existing committees with temporary representatives of various federal, state and county agencies. Preparation of the detailed plan of work for areawide plan development was scheduled as a first priority effort after receipt of funds.

SOUTHERN MAINE AREA

GENERAL DESCRIPTION

The Southern Maine designated planning area includes the southeastern portion of York County, Maine. The principal cultural and hydrologic features in the area are shown in Figure 2.

The designated planning area comprises approximately 363 square miles and has a resident population of 86,000 persons (1970), over 75 percent of the total population of York County. The coastal portion of the planning area is popular as a resort and location for second homes, and, with a growth rate in population of over 12 percent annually, is one of the fastest growing areas in Maine. The area also includes the majority of York County's places of employment and most of the public water and sewer systems in the County.

The area is largely rural and existing communities are not large. The 1970 populations of the major municipalities in the area were:

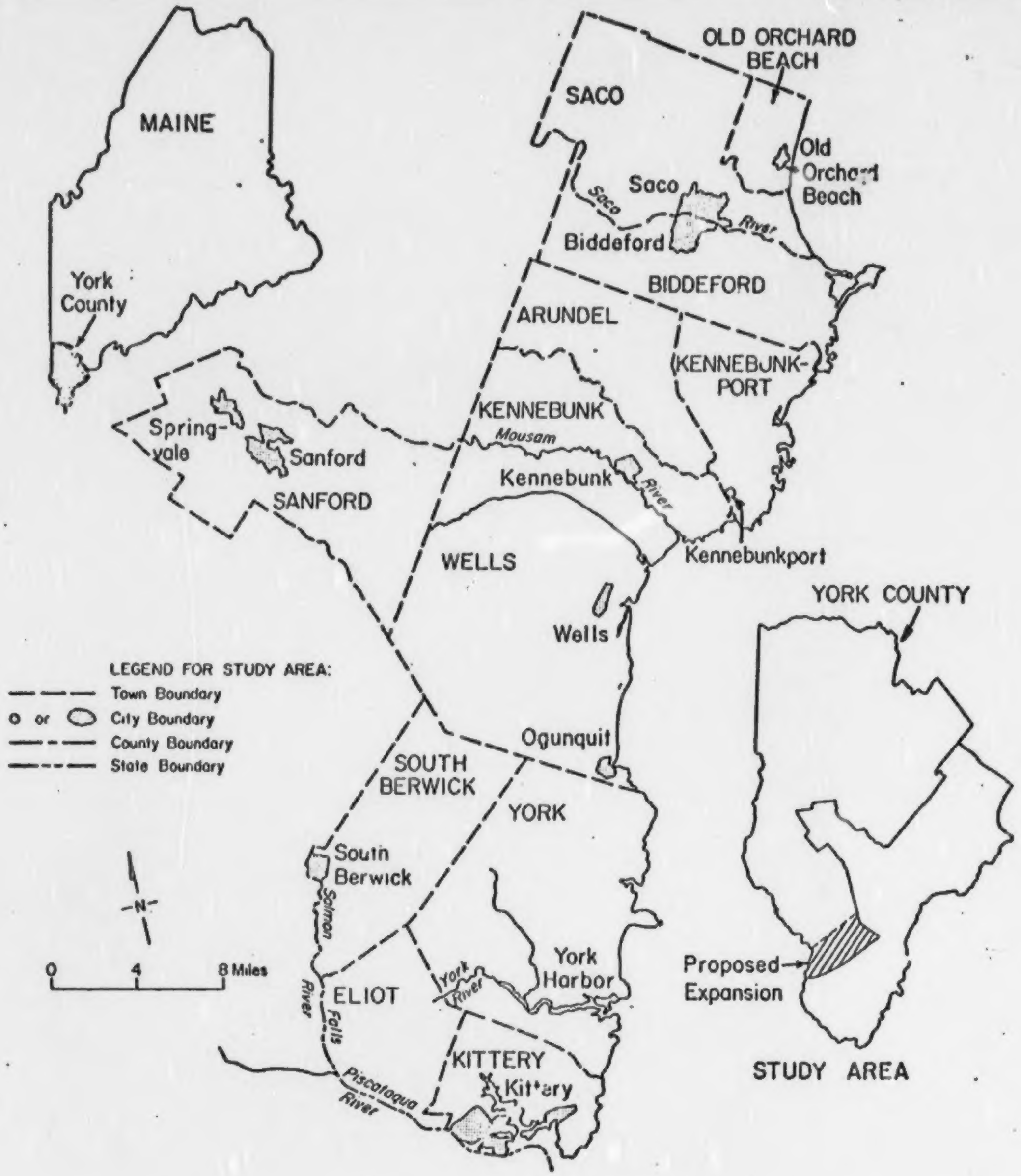
MAINE
York County
SACO
OLD ORCHARD BEACH
Old Orchard Beach
Saco
Saco River
Biddeford
BIDDEFORD
ARUNDEL
KENNEBUNK-PORT
KENNEBUNK
Mousam River
Kennebunk
Kennebunkport
Spring-vale
Sanford
SANFORD
WELLS
Wells
YORK COUNTY
LEGEND FOR STUDY AREA:
Town Boundary
o or City Boundary
County Boundary
State Boundary
Ogunquit
SOUTH BERWICK
YORK
South Berwick
N
0
4
8 Miles
Salmon Falls River
York River
York Harbor
ELIOT
KITTERY
Kittery
Piscataqua River
Proposed Expansion
STUDY AREA

Figure 2
Southern Maine Area

Biddeford	19,983	Saco	11,678
Kennebunk	5,646	Sanford	15,812
Kennebunkport	2,160	South Berwick	3,488
Kittery	11,028	Wells	4,448
Old Orchard Beach	5,404	York	5,690

Unless specific action is taken to retard growth, the population of the area is expected to continue increasing at a rate substantially greater than the State average of approximately 2 percent annually.

Physically, the area is characterized by a narrow coastal plain and hilly terrain gradually rising to the west. The area is extensively wooded throughout with occasional farms. Much of the land away from the coast, major rivers, and lakes is developed sparsely.

Economy

The principal economic activities in the designated area are manufacturing and tourist related activities. While much of the land area is forested, lumbering and manufacturing of forest products in the area is very limited. Less than 10 percent of the people in York County earn a living through forestry, fishing, mining, or agriculture.

Manufacturing - The major portion of the area's industrial activity is concentrated in the communities of Saco, Biddeford, Sanford and the Kittery area which is the location of a major Naval shipyard. Other industries employing significant numbers of persons include the textile, rubber, plastic, leather, electrical machinery, and transportation equipment industries. Employment at the Naval Yard at Kittery, the largest employer in the area, is approximately 4,000 and is nearly equal to the combined total employment in other major industries.

Industrial waste effluents are not of special concern except from leather tanneries that produce particularly strong wastes.

Agriculture - The most important farm products in the area are vegetables, livestock, poultry, dairy products and fruit. The amount of land suitable for farming is limited by slope and soils. Both the total land area used for farming and the number of farms is decreasing. Farms are relatively small, but as the number of persons engaged in farming diminishes, land holdings are being concentrated into larger ownerships. Cultivated areas are scattered and frequently separated by wooded areas. The area imports nearly all types of food products except milk, apples, and poultry.

Tourism Related Activities - The designated area is close to some of the most densely populated areas of the nation. Approximately 25 million persons live in the United States within 300 miles of the area, many of them in major metropolitan centers not affording the high environmental quality indigenous to Southern Maine. Boston and New York are, respectively, only 60 and 250 miles away from the southern boundary of the area. The area is also readily accessable to both Montreal and Quebec and provides the nearest ocean beaches for residents of those cities.

In addition to providing nearby and large expanses of relatively open and underdeveloped land, the area provides marine and fresh water fisheries, hunting for waterfowl and other game, and varied recreational opportunities. Areas adjacent to lakes and rivers in the region have been intensively developed for recreational use.

A recent study[9/] estimated a seasonal population within the designated area of nearly 175,000 people. This amounts to more than 200 percent of the year-round population of 86,000.

As a result of the highly desirable character of the area, development of seasonal and permanent housing and recreational sites is proceeding rapidly.

Much of the development is concentrated near the ocean. In some of the rural communities more than half of the community's valuation consists of property held by seasonal residents.

[9/] Public Affairs Research Center; Bowdoin College; Maine Population Projections, 1970-2020; prepared for the Maine State Planning Office; Brunswick, Maine. July, 1973.

Existing Water Resources Development

The major surface water resources of the area include the Piscataqua, Mousam, Kennebunk, Saco and Nonesuch Rivers and a large number of lakes. The flow of the rivers has been developed for power production and water supply.

The Saco River Basin developments include twenty dams constructed for hydroelectric power generation and industrial water supply. The towns of Saco and Biddeford as well as others outside the area obtain their water supply from the Little Ossipee River, a tributary to the Saco River. The Piscataqua River, an estuary throughout its 25 mile length, is not used for water supply but the Salmon Falls River, the upstream continuation of the estuary, has been extensively developed for industrial water supply and power production by construction of 16 dams in Maine and New Hampshire. Similar but less extensive use is made of other rivers in the area.

Ground water is generally available throughout the area and is heavily used as a source of domestic water supply.

Water Quality Problems

The most troublesome water quality problems in the area result from the domestic sewage of individual residences, recreational sites, and other developments; municipal and industrial discharges; and untreated storm water runoff from both sewered and unsewered areas. Other less significant sources of pollution include agricultural practices, sand and gravel extraction, and construction activities. Ground water is grossly polluted in some areas to the extent that ground water contributions to streamflow degrade the water quality of influent streams. Oil from spills occurring in the Portland area has been carried into the area by ocean currents and has caused considerable damage.

Of the several problem sources, only municipal and industrial discharges of waste have been inventoried and quantified. Little information is available concerning the exact location, magnitude, and character of wastes from the other sources or their impact on water quality.

A ground water investigation[10] sponsored by EPA and undertaken by the Maine Department of Health and Welfare at the request of the Southern Maine Regional Planning Commission concluded that approximately 60 percent of the ground water has been so degraded in quality as to limit its use.

The severity of water quality problems has from time to time required closing public beaches and clam flats in order to protect the public health. Notwithstanding these protective actions, hepatitis and other diseases associated with polluted water are relatively prevalent.[11] The severe existing ground water pollution is particularly dangerous since almost all homes in the rural areas depend on wells or springs for water supply. Existing water supply testing programs are not adequate to protect the health and safety of users of individual water supplies.[12]

Septic Tank Effluents - The rapid expansion in housing, recreational sites, and other developments in the designated area has largely taken place outside the established communities having wastewater collection and treatment facilities. The cost of installing sewers throughout the rural areas to collect residential wastes is viewed by local officials as prohibitively expensive, and septic tanks are, therefore, generally employed for waste disposal.

Soil suitability studies conducted by the U.S. Soil Conservation Service[13] indicate only about 25 percent of the area's soils are suitable for use of septic tanks. Some remaining soils are too wet and unable to accept the effluent, which boils to the surface polluting streams and lakes. Other soils are so porous that effluents move rapidly downward and pollute ground water. Pollutants from septic tanks are the major cause of the degraded ground water quality, and, other than municipal and industrial wastes, the greatest problem to be dealt with in the areawide plan.

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[10] Southern Maine Regional Planning Commission, Maine Department of Health and Welfare; and U.S. Environmental Protection Agency; An Individual Water Supply Study; York County, Maine; Alfred, Maine. 1974.

[11] U.S. Soil Conservation Service; Threshold to Maine Resource Conservation and Development Plan; Augusta, Maine. 1974.

[12] Southern Maine Regional Planning Commission op.cit.

[13] U.S. Soil Conservation Service; op. cit. p. 9.

Municipal Discharges - All of the municipalities in the designated area, excepting Arundel and Eliot, provide some degree of collection and treatment of wastes. However, treatment provided is not adequate in all cases. Old Orchard Beach, Kennebunk, Kennebunkport, York, and Wells now provide only primary treatment plants. The other communities in the area provide secondary treatment.

Treatment of municipal wastes is reportedly considered by the State Department of Environmental Protection to be unsatisfactory in the case of one community due to poor plan design and inadequate operation.

Industrial Discharges - All of the principal rivers in the area receive industrial discharges. Industries with private outfalls include tanning plants, textile mills, fiberboard, plastics, and other manufacturing plants. Industrial discharges total far less in volume than discharges from public systems but contain a much heavier BOD content. Industrial effluents are generally untreated.

Storm Water Runoff - Urban areas in the designated area having combined storm and sanitary sewers include Saco, Biddeford, Sanford, Kennebunk and York. Kittery and Ogunquit Village have separate storm and sanitary sewer systems. No storm water collection systems apparently exist in other portions of the planning area. Runoff collected from areas served by separate sewers is not treated, and the resulting impact on water quality of receiving streams is unknown.

EXISTING ARRANGEMENTS FOR WASTE TREATMENT MANAGEMENT

No formal and binding system presently exists for coordination of waste treatment management throughout the designated area. Where local planning and management for collection and treatment of wastes and abatement of pollution exists, it has been largely conducted on a unilateral basis by the several municipalities.

Existing Facilities

The major existing public waste treatment facilities in the designated area and basic information concerning them is shown in Table 2.

TABLE 2
PRINCIPAL EXISTING PUBLIC WASTE TREATMENT FACILITIES
SOUTHERN MAINE AREA

Location	Owner[14/]	Type of Treatment
Kittery	City of Kittery	Secondary
Ogunquit	Sewer Dist.	Secondary
Wells	Sanitary Dist.	Primary (Secondary Treatment Facilities Under Const.)
York	Sewer Dist.	Primary (Secondary Treatment Facilities Under Const.)
Kennebunk	Sanitary Dist.	Primary
Kennebunkport	Sanitary Dist.	Primary
Biddeford	Town of Biddeford	Secondary
Saco	Town of Saco	Secondary
Saco	Town of Saco	Physical/Chemical for Local Tannery
Sanford	Sewer Dist.	Lagoons
Old Orchard Beach	Sewer Dist.	Primary

[14/] Facility owners also provide operation in all cases.

Regulatory Programs

There are several state statutes which, among other purposes, establish programs to abate water pollution. These include the State Plumbing Code, Coastal Protection Act, Saco River Corridor Act, and various statutes pertaining to wetlands, great ponds, mining sites and oil discharge prevention. Implementation of these several Acts has reportedly been hampered due to a lack of information and planning on which to base regulatory action. The State Plumbing Code is particularly important because of its direct applicability to the problem of on-site disposal systems. It requires that private sewage disposal systems be constructed and installed in accord with certain requirements aimed at assuring proper operation. Malfunctioning private sewage disposal systems, including septic tanks, cesspools and others are declared by that Act to be a nuisance and the Department of Environmental Protection is authorized to order such action as it may consider necessary.

The Department of Environmental Protection is the principal water pollution control agency in the State. It's duty includes:

> *..exercising the police power of the State, to control, abate and prevent the pollution of the air, waters, coastal flats and prevent diminuation of the highest and best use of the natural environment of the State.* [Sec. 361 Chap. 3, Title 38, Me. Rev. Stat.]

To discharge its duties, the Department is authorized to adopt such regulations as it deems necessary.

PRIOR PLANNING

Land Use Planning

A regional land use plan exists which includes the designated area, but is approximately 10 years old and in need of updating. Revisions are being prepared by the Southern Maine Regional Planning Commission but have not yet been adopted by the Commission members. All of the towns within the designated area except Arundel have adopted land use plans.

Water Resources Planning

Water resources have not been widely viewed as a critical factor in Maine and no overall State plan exists for their control, development, conservation, protection, and use. Little comprehensive water resources planning has been accomplished in the designated area which is of assistance in water quality planning. Individual communities in the area are outgrowing their present sources of water supply and it appears likely that additional developments of presently unknown locations and magnitudes will take place in the near future.

Water Quality Planning

The only significant studies related to water quality accomplished to date which appear useful in developing the areawide waste treatment management plan is a basin plan for the York River Basins Area[15] prepared by the Water Quality Control Division of the Maine Department of Environmental Protection, and the report on ground water quality mentioned previously. The State's basin plan for the area includes inventories of municipal and industrial waste sources and suggestions for a limited amount of regionalization.

Environmental Planning

Two planning efforts oriented toward broad environmental concerns in the deisgnated area have been completed. The Saco River Corridor study,[16] completed in 1973, established the basis for land use controls along the flood plains of the Saco River and for drafting of the Saco River Corridor Act. Its implementation indicates willingness on the part of Maine's Legislature to enact land use legislation for purposes of environmental protection. As part of the planning process leading to recommendations of the Saco River Environmental Advisory Committee, numerous questions were asked of the public within the affected area. Responses indicated a public sentiment favorable to institution of the controls necessary to prevent overly-intensive development.

The designated area is within the area of the "Threshold to Maine" Resource Conservation and Development Project. The Project work plan [17] was completed in 1970. It

15/ Water Quality Division, Maine Department of Environmental Protection; York River Basins Area Interim Water Quality Plan with Addenda, August, Maine; 1972.

16/ Saco River Environmental Advisory Committee; The Saco River Corridor. Augusta, Maine, 1973.

17/ U.S. Soil Conservation Service, op.cit.

addresses the general environmental problems of York, Cumberland and Oxford Counties and proposes a number of projects to provide solutions. While the area encompassed by the study and described in the report is considerably larger than the designated area, the report includes numerous comments of interest in consideration of the financial and institutional implementation of the areawide waste treatment management plan. Importantly, the assessments made were endorsed by local officials and the State. They therefore give some insight into the types of local public concerns discussed in Chapter 3 which may result in de facto requirements affecting the design of a waste treatment management system.

Some of the points made in the "Threshold to Maine" report which are of particular interest in this regard include the following:

- Towns in the area are having financial difficulties and taxes have elevated beyond the level considered acceptable (p. 42).
- Rural non-farm development has seriously weakened the tax base of communities. (p. 42).
- The area has not adequately provided or supported private or public services for medical, dental and mental health; fire protection; or facilities for cultural and social activities (p. 43 & 50).
- A severe economic strain is expected to occur in 1975 as the Portsmouth Naval Shipyard in Kittery is phased out (p. 51).
- Shorelines, with but a few minor exceptions are overdeveloped and improperly developed (p. 54).
- Well established farms are subjected to severe economic problems due to poor markets, lack of processing and storage facilities, and high cost of production (p. 56).

° Many of the area's crops must be irrigated to insure profitable levels of production and little cropland is presently irrigated (p. 58).

° Taxing policies are encouraging poor [development] practices by high rates and excessive valuations (pp. 44 & 59).

° Farms, recreational enterprises, town managers, and other land managers often do not have adequate financial resources to apply conservation treatments necessary to prevent pollution (p. 48).

The above, to the extent applicable to the designated area and in conjunction with the unbalanced economic base, indicate that the area may lack the financial capability to implement any expensive measures. Any decision to expend significant funds for water pollution control is likely to be a major issue.

APPROACH TO PLANNING

Designation of the Planning Organization

Governor Kenneth M. Curtis proposed designation of the Southern Maine Regional Planning Commission as the organization responsible for areawide waste treatment management planning in early March of 1974. The designation was approved by EPA on June 26, 1974. Designation of the Commission was supported by all of the concerned governmental units within the designated area.

Description of the Planning Organization

The Commission is an organization incorporated pursuant to Sec. 4512 of Title 30 of the Maine Revised statutes and created by vote of the municipalities concluded within the Commission's boundaries. The Commission has been in existence almost eight years. Its membership includes elected officials of all municipalities within the designated areas. The Commission employs an Executive Planning Director and full time staff members.

Jurisdiction - The area included within the Commission's boundaries is shown in Figure 2. It includes all of the designated area.

Prior Planning and Implementation Experience - The Commission has developed and adopted planning board standards for review of subdivision proposals and has developed model zoning ordinances which have been well received in the region and in other portions of the state. The Commission has also worked extensively with communities to assist local planning efforts. Commission staff are experienced in review of development proposals and in planning procedures.

Program Initiation

An application to EPA for planning funds had not been prepared by the Commission at the time of this investigation. Submission of an application is scheduled for mid-December of 1974 and areawide waste treatment management planning is expected to begin about April, 1975.

Planning Participants

Participants in the areawide planning process are expected to include Commission staff, EPA, the Maine Department of Environmental Protection, Commission Members, representatives of various municipalities and special purpose districts, Federal agencies and the public.

The role of EPA is expected to consist primarily of coordination and participation on committees. The Commission does not expect to request any significant data inputs or technical assistance from EPA.

The Maine Department of Environmental Protection is expected by the Commission to play a more active role in development of the areawide waste treatment management plan including coordination of municipal, areawide, and basin planning; provision of data and information; and participation on committees as a voting member. In addition, the Maine Department of Environmental Protection may be asked to furnish technical assistance or to undertake portions of the planning program on a reimbursable basis. The Department of Environmental Protection is expected to participate intensively in plan review to insure the plan's acceptability since the Department has no fixed criteria regarding plan certification.

Consultants are to be engaged to carry out much of the project. The 25 to 35 percent of the funds to be expended in-house are expected to be used along with other purposes to carry out necessary financial and institutional studies. Consultant efforts will be oriented more toward the economic and engineering aspects of the plan.

STATUS

At the time of this investigation, the designation of the Southern Maine Regional Planning Commission as the planning organization to prepare the areawide waste treatment management plan had been approved by EPA but no detailed plan of work or application for planning funds had been prepared.

RALEIGH-DURHAM, NORTH CAROLINA, AREA

GENERAL DESCRIPTION

The Raleigh-Durham designated area includes all of Durham, Orange, and Wake Counties and portions of Chatham and Johnson Counties. The area is situated in the central Piedmont region of North Carolina.

The designated area comprises about 1700 square miles and has a resident population of approximately 400,000 persons (1969). The principal cultural and hydrologic features of the area are shown in Figure 3. The area has a number of relatively well defined communities separated by sizable rural areas.

The population of the principal municipalities in the area[18] are

Apex	2,192	Fuquay-Varina	3,576
Carrboro	5,058	Hillsborough	1,444
Cary	7,430	Raleigh	121,577
Chapel Hill	25,537	Smithfield	6,677
Clayton	3,103	Wake Forest	3,148
Durham	95,438		

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[18] Triangle J Council of Governments. Inventory and Atlas, North Carolina Region J. April, 1974.

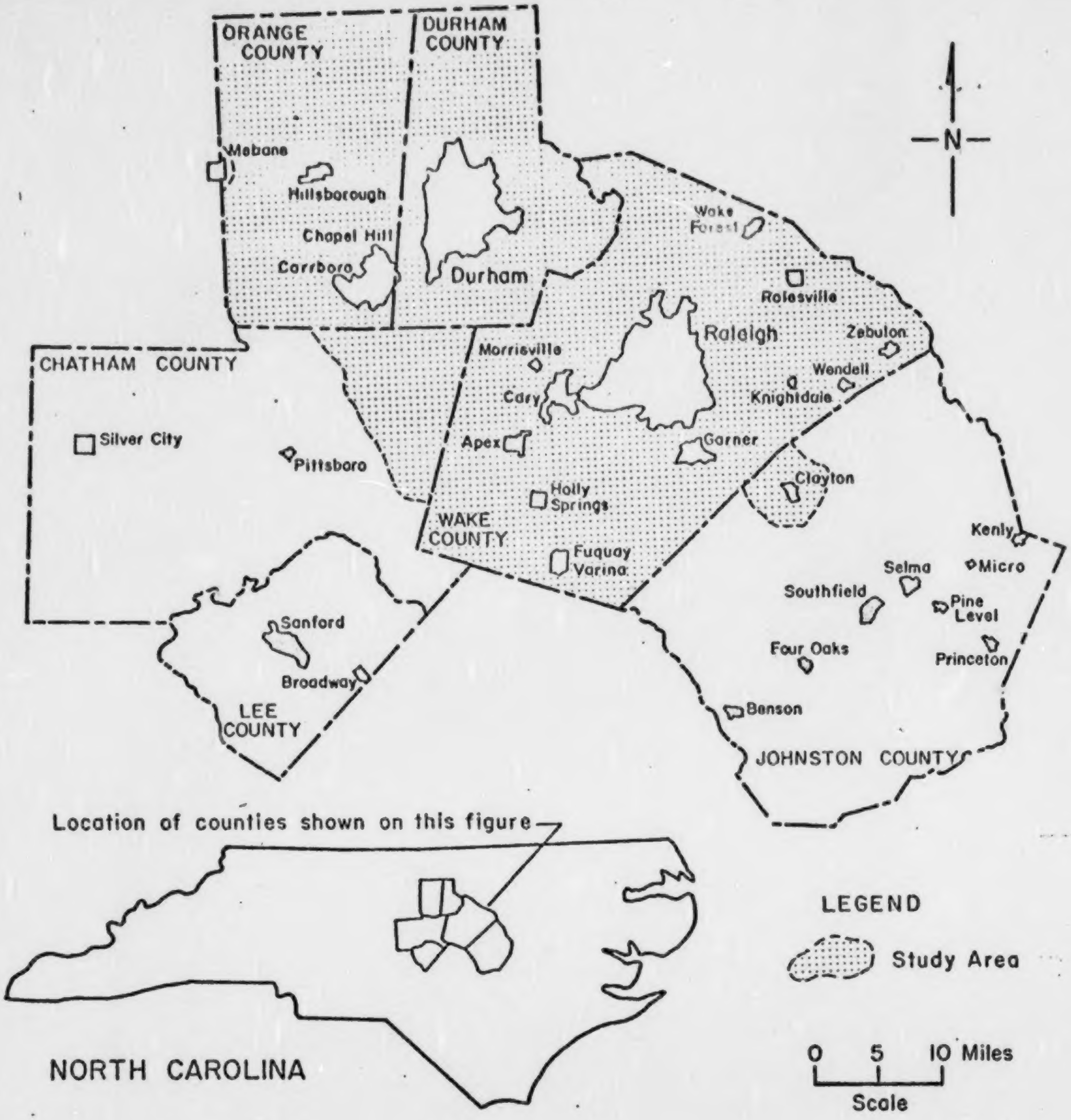
ORANGE COUNTY
DURHAM COUNTY
Mebane
Hillsborough
Chapel Hill
Carrboro
Durham
Wake Forest
Rolesville
Raleigh
Zebulon
Wendell
Knightdale
Morrisville
Cary
Apex
Garner
Clayton
Holly Springs
WAKE COUNTY
Fuquay Varina
CHATHAM COUNTY
Silver City
Pittsboro
Sanford
Broadway
LEE COUNTY
Kenly
Micro
Selma
Southfield
Pine Level
Four Oaks
Princeton
Benson
JOHNSTON COUNTY
N
Location of counties shown on this figure
NORTH CAROLINA
LEGEND
Study Area
0
5
10 Miles
Scale

Figure 3
Raleigh-Durham, North Carolina Area

Much of the rural area is not intensively developed for agricultural purposes. Farms tend to be small and are often separated by large expanses of woodland. Crops are primarily corn, tobacco, grains and some vegetables and fruits. The area is expected to have a high growth rate in coming years.

Topographically, the area is characterized by low rolling hills and a deeply incised stream system.

Economy

The basic economic activities in the designated area of particular interest to water quality considerations include agriculture, manufacturing, mining of stone and clay, and lumbering.

Manufacturing - The major cities within the area have a vigorous industrial base. Altogether there are in excess of 300 industrial establishments in the designated by the manufacture of textiles, tobacco products and machinery.

Agriculture - The principal crops grown in the area are cotton, tobacco, peanuts, corn, potatoes and truck produce with tobacco being the most important. Dairying is a substantial and growing industry in the area.

Lumbering - The area is heavily wooded, but lumbering is not extensive and the forest products industry is not a particularly important part of the area economy.

Mining - The mineral resources of the area are limited, and there is no commercial production of metallic minerals. The principal mining is for clay and stone, largely for local use.

Existing Water Resources Development

The principal water resources in the basin include the Neuse and Cape Fear Rivers, tributaries to the major rivers, and ground water. The rivers have significant gradient through the region and have been relatively well developed for power. Ground water is widely available at economic depths and heavily used for both private domestic and industrial use.

Water Quality Problems

A full identification of the type and extent of water quality problems in the Raleigh-Durham area has not been completed. However, staff of the designated planning organization think that most or all of the problems addressed by Sec. 208 exist in the area with the exception of salt water intrusion. The principal problems, in the order of their seriousness, are thought to be municipal discharges, storm water runoff, various nonpoint sources of pollution, and industrial wastes. The overall region and the designated area are also involved with the importation and exportation of wastes.

Municipal Discharges - All of the principal communities in the area provide collection of sanitary wastes and at least secondary treatment. Only a few of the smaller areas still rely on septic tanks. Even though the vast majority of wastes receive secondary treatment, streams in the area have characteristically small flows and cannot adequately assimilate the remaining waste load.

Preliminary analysis has indicated that in order to comply with water quality standards, all but one of the discharges require additional treatment of some type.

Storm Water Runoff - Little information is available on the specifics of storm drainage systems in the designated areas. The major communities are situated out of the valley bottoms and natural drainage, aided by some ditches, have been relied on to carry off rainwater. Flows from the small portions of the urban areas which ahve storm sewers are generally discharged at the nearest natural drainageway.

Nonpoint Sources of Pollution - While nonpoint sources of waste are thought to be significant in the area, no data is available to identify the particular sources or offending practices or to discriminate between them with regard to the seriousness of their impact on the quality of ground and surface water.

Industrial Wastes - Twenty industries, with a total flow of under 3 mgd discharge directly to streams. Of those 20, one industry accounts for almost 80 percent of the combined total discharge and three others for approximately 12 percent.

Previous studies indicate that 13 of the 20 industrial discharges will require treatment beyond the secondary level.

EXISTING ARRANGEMENTS FOR WASTE TREATMENT MANAGEMENT

There is no official and authoritative system presently in existence to coordinate waste treatment management throughout the designated area. A measure of coordination in particular areas is being provided by municipal-county action regarding the extension of water and sewer utilities. Agreements exist between Wake County and most municipalities in that County, and between Durham and Durham County. Some effort has also been made toward coordinated planning through the Triangle J Council of Governments' preparation of a Regional Development Guide.[19/] The recommendations made in that report were only advisory, however, and have been only partially implemented.

Management of facilities is presently the responsibility of the several municipalities and one sanitary district in the area and is conducted by each on a largely independent basis.

Existing Facilities

All of the major communities in the area provide collection of sanitary wastes and secondary treatment. Only a few of the small urbanized areas still rely on individual septic tanks.

Very few facilities have been installed for collection of storm water and where they exist, collection systems generally discharge to the nearest suitable stream without provision of treatment.

Regulatory Programs

Both cities and counties have the necessary authorities to exercise controls through zoning and subdivision ordinances and information indicates that various programs of that type are being carried out. However, the extent to which these controls are applied for purposes of water quality are unknown. Control of sediment is important in the area and action is just beginning at the state, county, and municipal level to initiate needed regulatory programs. Regulatory programs

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[19/] Research Triangle J Regional Council of Governments, Regional Development Guide; Research Triangle Park, North Carolina. 1969 for land use have been enabled under legislation relating to coastal zones and all levels of government are beginning to use the available powers although land use control is recognized as largely a municipal function.

PRIOR PLANNING

Little comprehensive water and land resources planning has been accomplished for the area which integrated local, state, and federal efforts. Planning which has been done was completed either by the state, the Triangle J Council of Governments, or local governments on what apparently was less than a fully coordinated basis.

Water Resources Planning

There is no comprehensive plan for water resources management and development which includes the designated planning area. The State of North Carolina has requested the Water Resources Council to initiate a statewide Level B Study in FY 1976 under Sec. 209, Public Law 92-500, but, even if initiated, study results would not be available during the early portion of the areawide waste treatment management planning effort.

A number of specialized studies have been completed which may be of substantial benefit in undertaking the areawide plan. These include various hydrologic and water supply studies by the U.S. Geological Survey, The Corps of Engineers, U.S. Soil Conservation Service and several of the cities in the area.

Water Quality Planning

The comprehensive water quality planning which has been carried out in or for the area includes development by the state of a basin-wide plan pursuant to Sec. 303(e) of the Act and preparation of a Regional Development Guide under sponsorship of the U.S. Department of Housing and Urban Development. The state's basin-wide plan for the region had been prepared in draft at the time areawide planning was begun but had not been made available for use by the Council at the time of the on-site investigation. The Regional Development Guide projected area needs for wastewater treatment facilities and land use and made recommendations for actions by the several communities of the area. However, that study is not considered as providing a fully adequate plan for either land use or water quality management.

Other studies related to water quality and potentially useful in development of the areawide waste treatment management plan have been prepared on a more limited geographic or functional basis. EPA, for example, has supported development of computerized models for water quality prediction in the Neuse River. The models developed may be particularly valuable tools in studying that portion of the designated area. Numerous studies of municipal waste treatment systems have also been prepared in recent years including at least one of the city of Durham which investigated sewer rates.

Notwithstanding the fact that municipal and industrial wastes generally receive secondary treatment, the poor water quality indicates advanced treatment is needed. Planning pursuant to Sec. 201 of the Act is underway for several of the larger communities of the region which include approximately 80 percent of the population in the designated area. The majority of the facilities related portion of the areawide plan is expected to be developed in those local plans.

APPROACH TO PLANNING

Designation of the Planning Organization

Governor James E. Holshouser, Jr., proposed designation of the Triangle J Council of Governments as the organization responsible for development of the areawide waste treatment management plan on February 20, 1974. The designation was approved by EPA on April 8, 1974.

Description of the Planning Organization

The Triangle J Council of Governments was created on June 30, 1972 and superceded the Triangle J Planning Commission. Together the current Council and its predecessor have engaged in regional planning for approximately 14 years.

The Council is made up of representatives from each of the 6 counties and 28 municipalities within its boundaries and several at-large representatives. It employs an Executive Director and several staff on a full time basis.

Jurisdiction - All of the designated planning area lies within the Council's boundaries.

Prior Planning and Implementation Experience - The Council is active in regional planning and has carried out numerous past projects including development of model land use regulations, water and sewer planning, and other programs. Over thirty separate projects are presently underway. The areawide waste treatment management plan is the largest project undertaken to date in terms of dollars.

Initiation of Planning

The application to EPA for planning funds was submitted on March 7, 1974 to the North Carolina Department of Natural and Economic Resources. EPA approved the application on April 30, 1974. The Triangle J Council of Governments agreed on May 22, 1974 to accept the grant.

Planning Participants

The principal participants in the development of the areawide plan in addition to staff of the Triangle J Council of Governments are expected to be representatives of the counties and municipalities in the area, the North Carolina Department of Natural and Economic Resources, EPA and presently undetermined other state and federal agencies.

The State of North Carolina, in addition to furnishing multiple representation on committees, will provide available data and information and conduct special studies within existing state budgets and priorities. The state is also expected to provide assistance in implementation in the event that needed actions could be more appropriately carried out under existing State agency authorities.

The Triangle J Council of Governments expects to conduct approximately 30 percent of the study with Council staff and to accomplish the remainder on a contractual basis.

STATUS

At the time of the on-site visit to the Raleigh-Durham area, the Triangle J Council of Governments had nearly completed recruitment of additional staff needed to carry out the project and staff members were beginning the first technical studies of the areawide planning process. A contract for assistance in development of a detailed work plan had been executed with the University of North Carolina at Chapel Hill, but work plan preparation had not begun. Project staff were proceeding to identify individuals expected to serve on a 60 to 70 member advisory committee. Little thought had yet been given to planning of the institutional and financial aspects of plan implementation.

CHAPTER 5

COMPARATIVE ANALYSIS OF CASE STUDIES

The Youngstown-Warren area is an obvious case in which pollution is due to an "urban-industrial" concentration. Raleigh-Durham, while including significant urban-industrial concentrations, is of interest because, even after advanced treatment of municipal and industrial wastes, the assimilative capacity of streams in the area will be exceeded. Although information regarding nonpoint sources of pollution is limited, extensive and comprehensive regulatory programs appear to be needed. Southern Maine is unique because development in rural areas is proceeding rapidly and past regulatory efforts have been less than fully successful, and because the town form of government found in New England is significantly different from that which prevails in most of the nation.

This Chapter highlights the principal similarities and differences between the case studies which may be of assistance in assessing the extent to which the recommendations made herein may be applicable to other areas.

INSTITUTIONAL CONSIDERATIONS AFFECTING MANAGEMENT APPROACHES

Existing and Enabled Waste Treatment Management Agencies

Youngstown-Warren, Ohio Area - The principal existing waste treatment management agencies in the Youngstown-Warren area include 19 municipalities, and two county sewer districts. The Mahoning County Sewer District includes all of Mahoning County while the Trumbull County Sewer District excludes some rural areas but incorporates all of the County's urban areas.

Other types of organizations with potential as waste treatment management agencies which are enabled under Ohio statutes include conservancy districts, sanitary districts, regional water and sewer districts and the state level Ohio Water Development Authority.

Southern Maine Area - The principal existing waste treatment management agencies in the Southern Maine area include the several municipalities, six municipal sewer districts having limited jurisdiction, and two sanitary districts. No other local organizations having potential as management agencies are provided for by existing Maine statutes.

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Available information did not indicate that any state level organization presently exists which could provide local facilities management.

Raleigh-Durham, North Carolina Area - The principal existing waste treatment management agencies in the planning area include five counties, 27 municipalities, and one small sanitary district. Other waste treatment management agencies enabled in North Carolina include metropolitan sewerage districts and water and sewer authorities.

Discussion - Of the three case study areas, only Ohio has a state level agency with authority to engage in local waste treatment management. Under certain conditions, the Ohio Water Development Authority may establish wastewater facilities service areas to carry out programs and represents the type of centralized "authority" reportedly held in disfavor by local officials in that and the other case study areas. Whether a single areawide management agency created by expansion of an existing district would be similarly unpopular is unknown. However, that type of management agency could probably be created in any of the areas studied either by legislation, joint exercise of powers, or intergovernmental contracting.

Proposed or Planned Approaches

Youngstown-Warren, Ohio Area - At the time of investigation, no specific attention had been given by EDATA, the state, local officials or other participants in the planning process to institutional approaches to areawide waste treament management. Persons interviewed thought it likely that a multi-agency management system would be better received on the local level than a new central agency. Expansion of the existing Trumbull County Sewer District to include the entire county and enable full implementation by the two sewer districts was also mentioned as a possibility.

The method of describing and dividing the proposed planning effort used in the preliminary plan submitted with the application for planning funds does not clearly identify specific tasks wholly devoted to institutional and financial studies. However, the descriptions and schedules do indicate a more or less continuing sequence of such studies throughout the planning period.

Southern Maine Area - Because the Southern Maine Regional Planning Commission had not proceeded to the point of preparing a work plan at the time of investigation, no attention had been given to the institutional approaches to areawide waste treatment management by the Commission or other anticipated participants in the proposed areawide planning process. In discussions held during the on-site visit to the Southern Maine area, a representative of the Maine Department of Environmental protection suggested that legislative creation of a new special purpose district specifically authorized to implement the areawide plan might be considered as one approach to plan implementation. However, the views of others participating in the discussions favored some institutional structure for management not requiring a central "authority".

A review of the Maine statutes by the Attorney General's Office[1] did make some comments concerning development of a management approach. While not recommending any particular approach, the review noted the following:

- Sanitary districts have adequate general authority to meet the requirements of Section 208(c) with the possible exception of the ability to "carry out appropriate portions of an areawide waste treatment management plan developed under subsection (b)."
- The statutory authority of each individual sanitary district and any other sewage agency should be examined to assure it meets all of the requirements, particularly as to its capacity to accept sewage from other municipalities which may be participating in the system.
- Conflict between the planning process and prerogatives of the State can be avoided by State agency adoption of the areawide plan as an agency regulation covering priority setting for grants to treatment works, land use, and discharge license determinations.

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[1] Section 208 - State Programs; Inter-Departmental Memorandum dated March 5, 1974, to Dave Freedmen, Asst. Engineer, Bureau of Water Quality Control from Donald G. Alexander, Asst. Attorney General.

Raleigh-Durham, North Carolina Area - No specific proposals of potential management approaches had been made or considered by any of the planning participants in this area prior to the discussions conducted during the on-site investigations. During those discussions, it was suggested that the most politically acceptable institutional structure for management would be a multi-agency system composed of those municipalities now operating waste treatment facilities. This point had reportedly been the subject of discussions held in the Raleigh-Durham area prior to designation of the areawide planning organization.

The schedule for institutional studies included in the preliminary plan for the Raleigh-Durham area anticipates 15 man-months of effort between the seventh and thirteenth month of the project. The projected schedule for financial studies is not explicit since the consideration of those aspects is not singled out as a separate work element.

Discussion - Notwithstanding the points made by the Maine Attorney General, no specific proposals for the institutional or financial approaches to management had been proposed or considered in any of the case study areas prior to the on-site interviews.

Persons interviewed in each area commented that local sentiment was against any type of central agency having the authority to "direct" local activities. This view was expressed in advance of studies of the authorities of existing management agencies. Also, local views held by present entities concerning the nature of an institutionalized management structure were evidently developed before the range of water quality control problems to be solved had been fully identified and evaluated, and without knowledge of the total cost of areawide plan implementation, distribution of the associated costs among parties, or potential efficiencies which might be gained by assigning management responsibilities to a single areawide agency. Continued discussion of this point may reflect changing opinions as more factual information becomes available on the authorities of existing and enabled districts and costs of plan implementation.

The possibility of extending the Trumbull County Sewer District to provide for full coverage of Trumbull County and then assigning all management responsibilities to the two county sewer districts may have some merit in the Youngstown-Warren area in that the use of the two districts would be an effective compromise between a single "authority" and a multi-agency management system with many more members. In addition, the two sewer districts are already established, and are therefore, presumably more acceptable than a new organization. At present the authorities of county sewer districts are not fully adequate to meet the Act's requirements. Use of the county sewer districts as facilities management agencies might be worth consideration.

In view of the present limited authorities of waste management agencies in Maine, legislation will be required. The decision between a "central authority" and other arrangements may well lie in assignment of regulatory program responsibilities. The need for a central administration for a unified regulatory approach to the problem of septic tanks in unsuitable areas may be met by the state's assumption of regulatory responsibility. In this case the problems of overall coordination are measurably lessened, and multi-agency management of facilities seems more workable. If regulatory responsibilities are assigned to the several municipalities, then some type of overall district may be needed to provide coordination and assure action.

The preliminary plans of work for the Youngstown-Warren and Raleigh-Durham areas propose radically different schedules for conducting institutional and financial studies leading to selection or design of the approach to areawide waste treatment management. The selection of management approaches is important to successful implementation of the areawide plan and the considerations attendant to design of successful institutional and financial approaches are complex. Therefore, further attention to the procedures for studying management approaches in the Raleigh-Durham area will be needed as planning progresses and some modification in study schedules may be required.

Meeting Federal Requirements for Waste Treatment Facilities Management

Youngstown-Warren, Ohio Area - The limited authorities of several of the waste treatment management agencies available pose substantial implementation problems in the Youngstown-Warren area if it is desired to allocate all responsibilities to existing or enabled local entities.

The types of organizations differ significantly in their powers. The authorities of some, particularly county sewer districts, conservancy districts, and sanitary districts, are so seriously limited that they would not meet the minimum requirements of Sec. 208(c)(2) unless corrective action is taken by the Ohio Legislature. Table 3 indicates the capability of each available type of waste treatment management organization to meet the federal requirements for legal authority.

Only regional water and sewer districts and the Ohio Water Development Authority have the express statutory authority to accept and use grants and other funds from any source for waste treatment management purposes. Conservancy districts, sanitary districts and municipalities are vested with authorities of a similar but less specific nature. Before assuming that those organizations met the federal requirements for waste treatment management agencies, clarification of their authority by the Ohio Attorney General would be desirable. County sewer districts have no such express statutory authority, and they could not serve alone as a management agency without legislative strengthening of their authorities.

The only potential management agency having express statutory authority to obtain from industrial users full recovery of the federal share of the cost of construction of treatment facilities reasonably attributable to treatment of industrial wastes is the Ohio Water Development Authority. Other agencies have general power to contract and charge; however, the adequacy of these powers to meet the requirement of the Act is uncertain. Again, clarification would be required prior to final selection of the implementation plan. If the authorities were not found by the Ohio Attorney General to be adequate, an indirect approach by which the Ohio Environmental Protection Agency required facilities operators to take such action as a condition for issuance of a discharge permit might be investigated. A more direct approach might be taken by moving directly for legislative action if the agency or agencies to play a role in facilities management can be identified at an early date.

None of the waste treatment management agencies existing or presently enabled in Ohio have specific authority

TABLE 3
LEGAL AUTHORITY OF OHIO WASTE MANAGEMENT AGENCIES[2]

Federally Required Authority[3]	Municipalities	County Sewer Districts	Ohio Water Develop. Authority	Conservancy Districts	Sanitary Districts	Regional Water & Sewer Districts
Design, construct, operate and maintain new or existing works [Sec. 208(c)(2)(C)]	Yes	Yes	Yes	Yes	Yes	Yes
Accept and utilize grants and funds for waste treatment management purposes [Sec. 208 (c)(2)(D)]	Uncertain	No	Yes	Uncertain	Uncertain	Yes
Raise revenues including assessment of waste treatment charges [Sec. 208(c) (2)(E)]	Yes	Yes	Yes	Yes	Yes	Yes
Incur short-and long-term indebtedness [Sec. 208(c) (2)(F)	Yes	G.O. Bonds Only	Yes	Yes	G.O. Bonds Only	Yes
Assure proportional sharing of treatment costs among communities [Sec. 208(c) (2)(G)]	Yes	Yes	Yes	Uncertain	Uncertain	Yes
Refuse to receive wastes from non-complying areas [Sec. 208(c)(2)(H)]	No	No	No	No	No	No
Accept industrial wastes for treatment [Sec. 208 (c)(2)(I)]	Yes	Yes	Yes	Yes	Yes	Yes
Recover facilities construction cost attributable to treatment of industrial wastes [Sec. 204(b) (1)(B)]	Uncertain	Uncertain	Yes	Uncertain	Uncertain	Uncertain
Assure proportional sharing of operation and maintenance costs among users [Sec. 204 (b)(1)(A)]	Yes	Yes	Yes	Yes	Yes	Yes

[2] Indiana University, Problems and Approaches to Areawide Water Quality Management. Department of Public and Environmental Affairs, October, 1973.

[3] See Chapter 3 and Appendix A for full statement of the required authorities.

"to refuse to receive wastes from any municipality or subdivision thereof, which does not comply with any provisions of an approved plan.." applicable to the area. Conservancy districts, sanitary districts, and municipalities may protect their treatment systems by refusing to accept certain types of waste. However, the adequacy of this power to meet requirements of the Act is unknown and clarification is needed. The Ohio Water Development Authority and regional water and sewer districts may promulgate rules and regulations regarding the use of their systems. Whether or not this authority would be found adequate by the Administrator is uncertain. County sewer districts have no authority to refuse acceptance of wastes.

The potential waste treatment management agencies appear to have the authorities necessary to their designation for implementation of the treatment facilities portion of the areawide plan other than as noted. However, the several deficiencies indicate that none are assuredly fully acceptable and legislation will probably be required to meet all federal requirements.

Southern Maine Area - The authorities of the potential waste treatment management agencies in the Southern Maine area are probably not sufficient to meet all federal requirements cited in Sec. 208(c)(2). Table 4 indicates the capability of each potential management organization to meet the federal requirements for legal authority.

Neither municipal sewer districts nor sanitary districts have specific authorization to recover from industry the federal share of the cost of the construction of waste treatment facilities attributable to treatment of industrial wastes.[4] Both types of districts also lack authority to refuse to accept wastes from areas not complying with the approved plan.[5] In addition, it is questionable whether municipal sewer districts can adequately proportion costs of plan implementation among the participating communities.[6]

4/ Indiana University op. cit.

5/ Indiana University op. cit.

6/ Indiana University op. cit.

TABLE 4
LEGAL AUTHORITY OF MAINE WASTE TREATMENT MANAGEMENT AGENCIES [7]

Federally Required Authority[8]	Municipal Sewer Districts	Sanitary Districts
Design, construct, operate and maintain new or existing works [Sec. 208(c)(2)(C)]	Yes	Yes
Accept and utilize grants and funds for waste treatment management purposes [Sec. 208 (c)(2)(D)]	Yes	Yes
Raise revenues including assessment of waste treatment charges [Sec. 208(c) (2)(E)]	Yes	Yes
Incur short-and long-term indebtedness [Sec. 208(c) (2)(F)]	Revenue Bonds Only	Revenue Bonds Only
Assure proportional sharing of treatment costs among communities [Sec. 208(c) (2)(G)]	Uncertain	Yes
Refuse to receive wastes from non-complying areas [Sec. 208(c)(2)(H)]	No	No
Accept industrial wastes for treatment [Sec. 208 (c)(2)(I)]	Yes	Yes
Recover facilities construction cost attributable to treatment of industrial wastes [Sec. 204(b)(1)(B)]	No	No
Assure proportional sharing of operation and maintenance costs among users [Sec. 204 (b)(1)(A)]	Yes	Yes

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[7] Indiana University op.cit.

[8] See Chapter 3 and Appendix A for full statement of the required authorities.

The Maine Attorney General's office has also questioned the extent to which authorities of the Board of Environmental Protection may be delegated to sanitary districts to "carry out appropriate portions of an areawide waste treatment management plan" and has recommended detailed review of their capacity to accept wastes from other municipalities which may participate in an areawide system.[9]

Other than the above, the potential waste treatment management agencies have at least some of the authorities necessary to their designation for implementation of the treatment facilities portion of the areawide plan so far as federal requirements are concerned. However, in view of the legal deficiencies identified, none are assuredly fully acceptable and additional legislation will probably be required.

Raleigh-Durham, North Carolina Area - All of the potential waste treatment management agencies in North Carolina, either presently existing in the Raleigh-Durham area or enabled by statute, have deficiencies and none appear as ready candidates to undertake areawide facilities management. The capability of the various types of management agencies to meet the federal requirements for legal authority are shown in Table 5.

All of the organizations except sanitary districts have the necessary express authority to design, construct, operate, and maintain treatment works. Clarification by the North Carolina Attorney General of the authority of sanitary districts in this regard should be obtained. Likewise, all of the organizations except sanitary districts have the authority necessary to accept and use grants or other funds for waste treatment management purposes. While there is not specific prohibition against sanitary districts doing so, clarification should be obtained before it is stated with assurance that such authority exists.

The only management agencies having authority to recover from industry the federal share of the cost of construction of treatment facilities attributable to treatment of industrial wastes, are sanitary districts and water and sewer authorities. While such actions may be within the power of municipalities, counties, and metropolitan sewer districts, no express authority exists for their doing so.

9/ Donald G. Alexander op. cit.

TABLE 5
LEGAL AUTHORITY OF NORTH CAROLINA WASTE MANAGEMENT AGENCIES[10]

Federally Required Authority[11]	Counties	Munici-palities	Sanitary Districts	Metropolitan Sewerage Districts	Water & Sewer Authorities
Design, construct, operate and maintain new or existing works [Sec. 208(c)(2)(C)]	Yes	Yes	Un-certain	Yes	Yes
Accept and utilize grants and funds for waste treatment management purposes [Sec. 208 (c)(2)(D)]	Yes	Yes	Not prohibited	Yes	Yes
Raise revenues including assessment of waste treatment charges [Sec. 208(c) (2)(E)]	Yes	Yes	Yes	Yes	Yes
Incur short-and long-term indebtedness [Sec. 208(c) (2)(F)]	Yes	Yes	Yes	Yes	Revenue Bonds Only
Assure proportional sharing of treatment costs among communities [Sec. 208(c) (2)(G)]	Yes	Yes	Un-certain	Yes	Yes
Refuse to receive wastes from non-complying areas [Sec. 208(c)(2)(H)]	Un-certain	Un-certain	No	No	No
Accept industrial wastes for treatment [Sec. 208 (c)(2)(I)]	Un-certain	Un-certain	Yes	Yes	Yes
Recover facilities construction cost attributable to treatment of industrial wastes [Sec. 204 (b)(1)(B)]	Un-certain	Un-certain	Yes	Un-certain	Yes
Assure proportional sharing of operation and maintenance costs among users [Sec. 204 (b)(1)(A)]	Yes	Yes	Yes	Yes	Yes

[10] Indiana University. *op cit*.

[11] See Chapter 3 and Appendix A for full statement of the required authority.

None of the management agencies has the specific authority to refuse to accept wastes from areas not in compliance with the plan. If strictly interpreted, this common deficiency assures that presently enabled agencies in in North Carolina even in combination, cannot comprise a federally approvable waste treatment management system.

Other requisite authorities which are uncertain are those of sanitary districts to proportion costs among communities and of counties and municipalities to accept industrial wastes for treatment.

Discussion - Ohio's Water Development Authority and regional sewer districts come close to meeting all federal requirements for waste treatment facilities management as do sanitary districts in Maine and water and sewer authorities in North Carolina. However, none of the presently existing or enabled districts in the case study areas are totally and assuredly approvable as management agencies for even the treatment facilities related portion of areawide plans. Additional deficiencies may become apparent when needed regulatory actions are identified. Legislation, and the possible delays related thereto, appears necessary in each state.

If any presently existing or enabled district had the capability to serve alone as a management agency without further legislative action, a powerful incentive would exist for assigning it responsibility for management. Local preferences for avoiding a central authority might be mitigated by use of intergovernmental contracting to return day to day operational control to present operating entities. However, if legislation appears inevitable, then consideration must be given to which, if not all organizations, should be strenghhened. Some cases may arise where the exteht of legislation required can be minimized or can be limited to possibly less controversial matters by judicious selection of the basic legislation to be modified. For example, provision of needed additional powers could be provided in Ohio by a minor adjustment of the authorities of the Ohio Water Development Authority whereas more extensive legislation would be required to enable any of the other organizations to meet federal requirements.

Meeting Federal Requirements for Regulatory Programs

The Act requires designated management agencies to have adequate authority *"to carry out appropriate portions of an areawide waste treatment management plan developed* *under subsection (b) of this section"* [Sec. 208(c)(2)(A)]. A thorough analysis will be required of the potential regulatory actions that might be required for control of nonpoint sources of pollution, the authorities required to carry out the various actions, and of the existing authorities.

Youngstown-Warren, Ohio Area - The major nonpoint sources of pollution in the Youngstown-Warren area are storm water runoff from some small urbanized areas, agriculture, and mining. The former problem is limited due to the relatively small areas without storm sewers. Local officials believe nonpoint sources have only a minor impact on stream quality compared to the extensive municipal and industrial waste flows.

Regulation will be required to prevent the storm water runoff problem from worsening. Zoning, subdivision ordinances, issuance of building permits, and other programs typically employed for such purposes are probably well within the existing legal authorities of the county and municipal governments. Their designation as management agencies for that portion of the plan should pose no problem of acceptance by EPA.

Mining practices and sources of waste related to mining will prove more difficult to identify and control. If the areawide plan proposes only an effort leading to identification of sources and developmemt of procedures for control, implementation problems may not arise immediately. Adequate authority probably exists for county governments and municipalities, whether independently or through EDATA, to carry out the inventories, studies and other actions required to identify sources, the extent of resulting physical and chemical pollution, determine the specific locations of occurrence, and design control programs. In the event the plan sets forth specific procedures and methods for control, detailed legal studies will be required to contend with the special problems associated with control of mining-related pollution including ownership, potential for secondary recovery, and others.[12] Implementation of control programs may also require authorities not presently possessed by potential management agencies.

Pollution problems related to agricultural sources in the Youngstown-Warren area, will probably require

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12/ U.S. Environmental Protection Agency; Processes, Procedures and Methods to Control Pollution from Mining Activities; Washington, D.C. 1973.

investigation of: water and wind erosion; use of fertilizers, herbicides, and pesticides; livestock management; cultivation practices; and leaching.[13] Control of agricultural pollution requires a combination of practices designed and selected to meet specific situations. Regulatory controls which modigy current practices and either increase the farmer's costs of operation, require substantial capital investments, or reduce yields will not be readily accepted on a voluntary basis.

Many of the necessary controls may be needed and best applied on a statewide basis.

Southern Maine Area - The federal requirements pertaining to the regulatory portions of the areawide plan applicable to the Southern Maine area are those relating to control of nonpoint pollution from septic tanks and storm water runoff. Since septic tank effluents and storm water runoff are major problems in the area, carrying out those actions necessary for their control would seem "appropriate" and therefore required.

Ample authority already exists to control the proliferation of septic tank installations in unsuitable areas through building codes, zoning, and subdivision ordinances at the local level or through the State Plumbing Code.

Present local regulatory authorities are probably adequate to prevent the storm water runoff problem from worsening in presently urbanized areas but the terrain limits the practical application of regulatory measures requiring runoff control by individual landowners in rural semi-developed areas. Short of stopping all development, regulatory controls may be of little assistance. Until an evaluation of nonpoint sources of pollution is completed, the seriousness of runoff from the semi-developed areas cannot be assessed. However, the sandy soils and small amount of impervious surface in the semi-developed areas suggests the problem may be minimal.

Correction of existing problems with septic tank effluents will require additional and perhaps presently unavailable authorities. For those areas where the density of development warrents, installation of sewers may appear as a feature of the facilities portion of the plan and obviate the need for addressing problem correction through regulatory or other measures. However, this solution has been considered in the past and found prohibitively expensive for much of the area. In the absence of a detailed examination of the legal authorities of sanitary districts and municipal sewer districts, the capability to institute the necessary land use and other controls required for correction of existing problems cannot be assessed. Problem correction through regulatory measures could place unacceptably large financial burdens on individual land owners.

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[13] U.S. Environmental Protection Agency; Methods and Practices for Controlling Water Pollution from Agricultural Nonpoint Sources; Washington, D.C. 1973.

Raleigh-Durham, North Carolina Area - Problem identification at the time of the on-site investigation had not proceeded to the point of identifying existing nonpoint sources of pollution. One known problem is the storm water runoff from urbanized areas.

The basic character of the area is rural with well defined urban areas. Further urbanization appears likely to occur in the immediate vicinity of the existing communities in most instances. Both municipal and county authorities are probably adequate to assure that further development is accompanied by installation of storm sewers.

Discussion - Substantial differences are apparent between the nature and extent of regulatory programs likely to be required in the case study areas. All three areas have some need to assure that adequate storm water collection and treatment facilities accompany further urban development and the usual police powers of cities and counties, or towns in the case of Maine, are probably adequate to the task. The Youngstown-Warren and Southern Maine areas both face problems which are probably more susceptible to state rather than local action and which may require presently unanticipated assistance from various state agencies to properly design and implement control programs.

The Southern Maine area has an unusual problem brought about by the past development of sites which are unsuitable for septic tank systems. Regulatory measures can, if firmly enforced, prevent the problem from worsening but at the same time will prevent the growth of user density to a point which might make structural correction of the problem financially feasible. The fact that the economy of the area is so directly related to the influx of money from tourists and seasonal residents makes decisions regarding the regulation of further development matters of vital public policy in the area.

Regulatory measures undertaken to cause individuals to correct existing on-site waste disposal problems could put large financial burdens on landowners and be particularly objectionable if present investments could not be amortized or some type of aid provided.

Meeting Federal Requirements for the Continuing Planning Process

Few explicit requirements regarding the continuation of the areawide planning process have been established by the Act. The legal aspect of the institutional arrangements for future planning will probably pose no significant problems. In each of the case study areas, adequate authority for future areawide planning lies with the presently designated planning agencies and probably with other local agencies as well as with the State.

Meeting State Requirements

No explicit requirements for certification of areawide plans have been established by the Ohio Environmental Protection Agency, the Maine Department of Environmental Protection, or the North Carolina Department of Natural and Economic Resources.

Meeting Local Requirements

No known local requirements affecting selection of the institutional or financial approach to waste treatment management have been stipulated in the resolutions supporting initiation of the areawide plan or elsewhere for the case study areas. However, when the plan is available for study, specific requirements may surface and become conditions for plan approval.

Local preference was expressed in each area for leaving operational control where presently exercised with minimum centralization.

Effective Implementation

Youngstown-Warren, Ohio Area - The authorities of the Ohio Water Development Authority provide a "backstop" for local performance of assigned tasks in carrying out the facilities related portion of the areawide plan which, based on present information, is by far the most urgently needed action. If the areawide plan is adopted by the Ohio Environmental Protection Agency and orders issued by the Agency for implementation actions are not complied with, the Director of the Agency may request the Ohio Water Development Authority to establish a wastewater facilities service area to undertake the needed actions. This alternative may be sufficiently repugnant to local governmental units to motivate as well as assure action.

Regulatory programs are not so likely to be effectively implemented. The programs needed will require either substantial state assistance, as in the case of mining related pollution, or adoption by numerous municipalities of various codes and ordinances. Institutional avenues to compelling such action may be limited in practical terms.

The past funding of water quality and other types of planning suggests that EDATA, if designated to perform future planning, would be relatively well assured of the necessary local support for doing so.

Southern Maine Area - Local governments in the Southern Maine area have been aware[14] [15] [16] [17] of the environmental impacts of poor land use development, including particularly the degradation of ground and surface water quality caused by septic tank effluents. However, apparently the past efforts of neither the state nor local governments have been adequate to effect control.

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[14] U.S. Soil Conservation Service; Threshold to Maine Resource Conservation and Development Plan; Augusta, Maine. 1974.

[15] York County Regional Planning Commission; Annual Report, 1970.

[16] James W. Sewall Co.; Vol. I, Development Plan Summary and Conclusions, York County, Maine: Old Town, Maine, 1963. Prepared for the York County Planning Committee.

[17] Saco River Corridor; prepared by the Saco River Environmental Advisory Committee. 1973.

Various reasons may exist for the lack of regulation in the past including lack of an adequate technical foundation on which to base regulation, and conflict with the prospects of future economic growth. Selection of an effective institutional structure for management will require analysis of the reasons for past inaction and assignment of responsibilities for carrying out regulatory programs so as to achieve compliance. Because of the number of towns involved in locally supervised regulation, reliance upon the State Plumbing Code administered by the Department of Health and Welfare appears attractive.

Implementation of the facilities portion of the plan will not present any particularly serious problems. In most cases, municipalities have proceeded with construction of needed facilities in the past and extensive additional facilities construction will not be necessary. Coordination of facilities related activities by the several municipalities and districts will be needed where regionalization is planned but probably can be adequately provided on an official basis by the Maine Department of Environmental Protection and perhaps by the Southern Maine Regional Planning Commission.

The implementation of the portions of the areawide plan dealing with the continuing planning process seems assured, with the exception of financing, in the event the Southern Maine Regional Planning Commission is designated as the management agency. The Regional Planning Commission has performed successfully in the past and is well accepted by the local governments. However, assurance of continued financial support for planning appears questionable.

Raleigh-Durham, North Carolina Area - One of the major obstacles to effective implementation of the facilities portion of the Raleigh-Durham areawide plan is the relatively large number of entities presently engaged in collection, treatment, and disposal of wastes. Coordination of activities will be particularly important if each is to continue its present role. No sure mechanism for coordination is available short of imposing a single new district over the area or looking to the state for this necessary function

Discussion - Both the Youngstown-Warren area and the Southern Maine area seem to have some assurance of effective action to implement at least the most important portions of their plans. Insufficient information is available in the case of the Raleigh-Durham area to assess the potential effectiveness of action.

The Act requires that the authority to refuse to receive wastes from areas not in compliance with the plan exist somewhere within the agency or agencies comprising the institutional structure for management. Presumably, compliance would also include taking action to carry out regulatory programs and suggest that effective implementation might be assured by use of that authority. In addition to the major problems which would be generated in any effort to refuse to receive wastes, particularly from public sources, entities operating the receiving facilities and those designated to implement regulatory actions may be one and the same. If designations were so made, little assurance would be provided that regulatory programs would be diligently pursued.

The problem of achieving effective implementation of regulatory portions of an areawide plan may be eased by assuring full debate of the detail of suggested programs before their final incorporation in the plan. At any rate, approval of the areawide plan will probably not be forthcoming at the local level if it contains programs seriously opposed by local governments.

Implementation of the planning portions of the areawide plan can probably be effectively achieved in each of the areas by assignment of the responsibility to the presently designated planning organization. In each case, one of the principal concerns will be arranging an adequate and dependable source of funds.

Coordinated Planning and Development

Youngstown-Warren, Ohio Area - Planning in this area is well advanced for land use, comprehensive water resources development and municipal water supply. Water pollution abatement plans can be readily developed within an overall framework of land and water resources management. This existing framework should help insure that the areawide plan for waste treatment management is compatible with other related activities and enable even a multi-agency management system to avoid serious problems resulting from conflicting development.

Southern Maine Area - The excellent prospects for future water resources development in the area for various purposes, including municipal water supply, and the lack of a comprehensive plan therefor, places a premium on assuring a high level of coordination between planning and development for water quality, water supply and other purposes and should be considered in design of the waste treatment management system. One certain way to accomplish adequate coordination is to place water supply and waste treatment for the entire area within a single administrative unit. Water and sewer authorities are enabled in Maine and could serve this purpose if necessary. However, this approach embodies the central authority which reportedly is not desired. Additionally, complex changes in water supply arrangements as well as those for waste treatment might be involved.

No present plan for water resources development now exists in the region. The areawide planning process must either address this deficiency and provide a basic plan for water resources development or be based on carefully chosen assumptions fully coordinated with appropriate local, state and federal agencies.

Raleigh-Durham, North Carolina Area - No comprehensive land use plan exists for the planning area or plan of development for the water resources of the area. A basin-wide water quality plan is presently being prepared by the state and will soon be available in draft.

The Triangle J Council of Governments expects to devote a sizable portion of the overall planning effort to development of land and water resource plans to establish a foundation for the areawide plan.

Discussion - To assure that plans for maintenance and improvement of water quality are not negated by developments undertaken for other purposes, substantial portions of the areawide planning effort in the Southern Maine and Raleigh-Durham, North Carolina areas may need to be devoted to preparation of land use plans and water resources plans.

Planning in the Youngstown-Warren, Ohio area can probably be much more restricted to specific water quality concerns.

Inclusion of land use plans or water resources development plans as a part of the areawide waste treatment management plan may impact the review and approval process. If assumptions made or plans prepared for land use or water development are crucial to the plan and included therein, an institutional structure for management with the authority to implement those as well as other plan features would be desirable.

Assignment of Planning Responsibility

While any of the potential waste treatment management agencies might carry out the required future planning, considerations other than existence of the necessary legal authority are important. With the exception of the state, the organization presently designated for development of the initial areawide plan is the only organization in each of the areas which has adequate geographic jurisdiction for planning. Assignment of planning responsibilities to municipalities, counties, or presently existing special purpose districts would require an undesirable division of the responsibility on either a functional or geographic basis or both. Efforts to assign future planning for the whole area to one governmental unit extending over and having representation from only a portion of the area, as might exist if a single management agency was developed through intergovernmental contracting, would probably be unacceptable to at least some of those governmental units included. A new district is not likely to be created solely for planning. However, if an areawide district were created for facilities management, planning responsibility might be assigned to it.

The presently designated planning organizations represent a source of expertise in regional planning and repository for much of the information and data likely to be required in the future. The experience of their board members, committiees, and staff will be considerably extended as development of the areawide plan proceeds as will the accumulated data and information.

The benefits of continuity and a measure of coordination with other programs could be assured by assigning future planning to presently designated organizations. In fact, unless a management agency extending over the entire area is created for some other purpose, there may be no effective alternative in any of the areas to assigning future planning to the present planning agency.

Where comprehensive plans for land and water resources development are not well developed, additional benefits may result from assigning updating of the areawide plan to an organization with broad planning responsibilities to assure water quality management planning is compatible with and supportive of other resource planning.

FINANCIAL CONSIDERATIONS AFFECTING MANAGEMENT APPROACHES

The financial requirements for waste treatment management in the case study areas are not known and will not be known, even approximately, for several months. Some observations can be made however, based on the general nature of the expected plans.

The financial requirements for implementation in each area will include :

- capital costs;
- operations and maintenance costs; and
- overhead costs.

The financial approach to waste treatment management permits considerable latitude as to whether certain of the costs are treated as a part of overhead or operations. As noted in Chapter 3, the decision may have implications as to who bears the burden of the cost and other ramifications. Alternatively, characteristics of the selected institutional structure for management will affect financial arrangements.

Capital Costs

Youngstown-Warren, Ohio Area - Due to the volume of municipal and industrial point source effluents requiring treatment, the significant opportunities for regionalization of facilities, and the relatively low level of treatment presently provided within the Youngstown-Warren area, facilities construction costs may be large. A 1970 study[18/] indicated an existing need for sewerage construction estimated to cost $38,000,000. In addition, presently existing publicly owned waste collection and treatment facilities are valued at approximately $95,000,000. The total commitment of dollars necessary to achieve central ownership

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[18/] Mahoning-Trumbil Council of Governments; A Water and Sewer Plan and Program. Youngstown, Ohio, September, 1970.

of a total system by a single management agency would be very large. Alternative procedures that merit consideration would permit the designated management agency to assume control of the existing facilities and dedicate a portion of the revenue produced to payment of any unamortized capital costs in accord with existing financing commitments.

All of the potential management agencies in Ohio have authority to issue both general obligation bonds and revenue bonds subject to various restrictions except sounty sewer districts and sanitary districts which may issue only general obligation bonds.

It should be noted that because a large portion of the expected capital costs will probably be attributable to treatment of industrial wastes, extensive contracts or other agreements will be necessary to assure appropriate cost recovery. The only Ohio agency expressly authorized at the present to obtain such recovery is the Ohio Water Development Authority. Securing the agreement of industries to repayment contracts will assuredly raise questions as to whether certain of the older and less efficient manufacturing installations should be continued.

Southern Maine Area - Selection of the approach to be recommended for financial implementation of the areawide plan may be extremely sensitive in view of the poor economic conditions which, according to the Threshold to Maine[19/] report, prevail in the area and the major importance of tourism related activities.

Based on information available at the time of investigation, it does not appear that an extremely large amount of facility construction will be recommended in the areawide plan to collect or treat sanitary wastes. A substantial level of treatment is presently provided in the urban portions of the Southern Maine area, and additional construction is underway. However, substantial costs may be involved in relief of problems due to storm water runoff in those urbanized areas which are presently without sewers.

Municipal sewer districts and sanitary districts may both issue revenue bonds. While this source of funds

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[19/] U.S. Soil Conservation Service. op.cit.

may prove adequate to finance needed work in urbanized portions of the area, revenues in the rural portions will be difficult to raise.

The arrangements made for recovery of construction costs from industries in accord with Sec. 204(b)(1)(B) should be detailed because of the limited number of industries in the area. To assure repayment, individual contracts will probably be required. Presently, neither municipal sewer districts nor sanitary districts are expresly authorized to obtain such repayment.

Raleigh-Durham, North Carolina Area - The extent of construction required to provide adequate collection and treatment of sanitary wastes will probably be substantial. Preliminary studies have indicated a need for treatment beyond the secondary level for a number of the major discharges. Due to the present absence of storm sewers in the area, large construction costs are likely to be involved in correction of that lack as well as for provision of the necessary additional treatment capacity.

Both general obligation and revenue bonds can be issued by all of the potential management agencies. Whether or not the capability exists to finance the large cost of storm water collection and treatment facilities has not been determined.

The general level of industrialization in the area is substantial, but does not predominate in the consideration of waste treatment facilities construction. Adequate recovery of capital costs can probably be obtained by treatment of industry as a group if a single areawide organization assumes that responsibility. If individual communities or districts undertake collection of industrial repayment, specific contracts will be required in those areas not having a suitable number and mix of individual plants.

Discussion - Each of the areas face potentially large capital costs but for differing purposes and with differing prospects of meeting the costs.

Capital costs in the Youngstown-Warren area will be largely associated with construction of secondary and other waste treatment works. The total amount could be greatly influenced by industrial decisions to terminate operations or provide their own treatment. The needs for storm sewer construction in the Raleigh-Durham area and associated treatment facilities may exceed the costs for control of sanitary wastes even though advanced treatment of municipal and industrial wastes is needed. Together, the large total cost may surpass the presently existing local capability and require a lengthy staged construction program.

The most difficult problems related to capital costs appear to exist in the Southern Maine area even though the total costs involved may be less than in either of the other two areas. Meeting capital costs there will be complicated by the relatively poor economic situation which generally prevails and the dilemma presented by the conflicting needs to curtail development in presently unsuitable areas and to achieve sufficient density of development to support eventual installation of sewers.

Operation and Maintenance Costs (Facilities)

Consideration of how the operation and maintenance costs for waste treatment facilities are to be provided involves the total amount of revenue required to be generated and the allocation of the total cost among the several users. The Act [Sec. 204(b)(1)(A)] requires that each category of user pay its proportionate share of the costs of operation and maintenacce of waste treatment services.

Youngstown-Warren, Ohio Area - Arriving at the proper assignment of costs for treatment in the Youngstown-Warren area will probably require extensive monitoring of industrial effluents which will itself be expensive and which may be treated as an operational cost.

All of the probable facilities management designees have authority of one type or another to make appropriate charges to users. More cogent is the question of how cost sharing will be determined. A similar question is generated by the need for compliance with Sec. 208(c)(2)(G) which requires that the designated management agency have adequate authority:

> *..to assure in implementation of an areawide waste treatment management plan that each participating community pays its proportionate share of treatment costs.*

Because implementation of the Youngstown-Warren area plan will be so expensive and so oriented toward facilities construction, resolution of these questions will be of vital importance.

No procedure other than negotiation is readily apparent as a procedure for cost allocation. If negotiations are undertaken, then decisions will be required as to the participants in the negotiation. The State of Ohio has no agency with rate setting authority or authorization to conduct binding arbitration between waste treatment facility owners, operators and users. Nevertheless, the participation of the state, possibly through the Division of Intergovernmental Affairs of the Ohio Environmental Protection Agency, may deserve consideration as an assist to development of equitable arrangements. Notwithstanding the Department's lack of a specific legislative assignment to arbitrate, its role as representative of the broad public interest and its permit issuing powers enables it to exert a significant influence sufficient to avoid stalemate between representatives of local units of government and industry. Fulfillment of this role would require that the Department be prepared to make sophisticated analysis of economic and other factors. Due to the lack of statutory authority, however, these arrangements may not satisfy the Act's requirement that the designated management agency have adequate authority to assure proportional sharing.

Southern Maine Area - Both municipal sewer districts and sanitary districts can make charges in such a manner as to proportionately distribute costs of operation and maintenance among users. The total operational and maintenance cost for the facilities portion of the Southern Maine areawide plan probably will not differ significantly from that presently existing and no special considerations relating to those charges are apparent.

Raleigh-Durham, North Carolina Area - The legal authority to apportion costs to users and to participating communities exists, but accomplishment will be difficult due to the large number of entities involved in waste treatment. In addition, some importation and exportation of wastes may be involved in the area. No method for allocation of costs seems to exist in the absence of an areawide special purpose district with appropriate powers. As in the Youngstown-Warren area, state assistance will be required to assist in negotiations between communities, particularly for those concerning operation of regional facilities.

Discussion - The equitable allocation of operation and maintenance costs may prove nettling; particularly where regionalization is extensive or where large numbers of communities and/or large industries are involved. If an areawide district having suitable authorities is established, then cost allocation can be more easily accomplished. Failing this solution, negotiations will be necessary and probably difficult and, in situations such as those in the Youngstown-Warren and Raleigh-Durham areas, should be approached early in the planning process on at least a conceptual level.

Operational and Maintenance Costs (Regulatory)

Youngstown-Warren, Ohio Area - The principal regulatory programs needed in the Youngstown-Warren area, and which can be effectively carried out at the local level, will probably not be expensive to initiate and maintain.

In addition to their small total cost, distribution of regulatory responsibility among counties and municipalities could produce a relatively equitable sharing of cost.

Southern Maine Area - Initiation and continuation of needed regulatory programs, including educational activities, information collection, and enforcement will be expensive. However, many of the costs can probably be transferred to the state by designating the Maine Department of Health and Welfare to implement controls over improper site development.

Raleigh-Durham, North Carolina Area - Regulatory programs needed in the area are not determined because pollution problems have not been defined. Preliminary data indicates that treatment of present municipal and industrial wastes will not be adequate to reduce area waste loads to the assimilative capacity of the receiving streams. Whether or not this condition will still prevail after the use of structural measures to control storm water runoff from urban areas is not known. Under any conditions, the areawide plan must include those mandatory regulatory programs specified by the Act. If those programs, in addition to treatment of present point source waste discharges and control of storm water runoff are not adequate, then an extensive and costly program to regulate nonpoint sources of waste may be required.

Discussion - Regulatory programs are less costly to administer than many structural measures but may still be expensive. Regulatory costs are dependent on the size of the area being regulated, need for monitoring, controversiality of the program, and extent of enforcement. The assignment of responsibility for implementation of regulatory programs can substantially affect the distribution of costs. In most cases, an equitable division of costs appears relatively easy to obtain by assigning responsibility to municipalities and counties within their respective jurisdiction. Where the state undertakes needed regulation, direct local costs may be negligible.

Overhead Costs

Overhead costs associated with plan implementation will probably consist primarily of that associated with coordination of facilities management and/or monitoring and planning. Since an equitable sharing of overhead costs can be approximated by the distribution of operation and maintenance charges, revenues from facilities operation appear to be a reasonable alternative in each area as a source of that portion of overhead funds related to facilities management. Some additional points affecting monitoring and planning may warrant further consideration.

Youngstown-Warren, Ohio Area - The need for monitoring in the Youngstown-Warren area, and the costs therefor are not likely to be uniformly distributed among all of the system users. Industrial wastes will make up a large portion of the total waste treated. Because of their importance and lack of uniformity, frequent and detailed monitoring will probably be necessary. While the costs for monitoring could probably be acceptably treated as an item of general overhead, its recognition as a special cost for each category of user might be more appropriate. Alternatively, provision for at least industrial monitoring costs could probably be made by requiring self-monitoring as a condition for a discharge permit.

An adequate budget for future planning can be provided in a number of ways. The alternatives available may depend on the agency designated to conduct the future updating and revision of the areawide plan.

If EDATA is designated to carry out future water quality related planning, financial support for planning could be provided either through some method of assessment of its members, through revenues collected by the facilities management agency(ies) or by state grants made through the Ohio Water Development Authority.

Southern Maine Area - Monitoring costs in the Southern Maine area will be relatively small, and their distribution probably will pose no serious problem. Because of the limited size of industries and their total number, monitoring of the effluents as well as those of communities could be satisfactorily assigned to the municipalities or to the facilities agencies and treated as an overhead cost. However, a centralized arrangement for monitoring might be cost-effective in view of the duplication otherwise encountered in staff and equipment among the towns or municipalities. Such an arrangement might be achieved by intergovernmental contracting for monitoring services, use of a single areawide management agency or assignment to the Southern Maine Regional Planning Commission.

Future planning in the area could be supported through assessment of members of the Southern Maine Regional Planning Commission or from revenues.

Raleigh-Durham, North Carolina Area - Monitoring costs in the area will probably be substantial due to the number of communities and industries. As in the case of the Southern Maine area, considerable cost savings might be achieved by an arrangement providing for assignment of all monitoring in the area to one body.

Planning costs can be met through either assessment of member communities of the Triangle J Council of Governments or by revenue and acceptable arrangements can probably be made in either case.

Discussion - Monitoring costs will probably vary considerably between the several areas, being greatest in the Youngstown-Warren area and least in the Southern Maine area. Aside from the considerations of imposing monitoring costs on dischargers which are particularly important in the Youngstown-Warren area, all of the areas could probably benefit by assignment of monitoring to one central agency which could provide the trained staff, equipment and facilities to conduct the program efficiently. This consideration may be particularly important in the Southern Maine area where the minimization of costs may be an overriding need and where the majority of communities are small and necessarily have limited staffs.

Planning may be supported in each of the areas through the presently designated planning organization or through some type of arrangement to use a portion of revenues from facility operation. However, none of the present planning agencies are capable of requiring a specific budget to be approved by their constituent communities and cannot assure that the planning process will become self sustaining.

Dependence of planning upon the largess of either member communities or a local operating entity could place the planning agency in an undesirably dependent position with regard to the limited and special interests of either.

If a strong central authority is developed and has responsibility for facilities management and regulatory programs, revenue from operations could probably be readily provided to support planning. If responsibility for facilities management is divided among a multi-agency facilities management structure, then selection of one or a set of those agencies to conduct planning from their revenues or collection of appropriate portions of revenue from all may pose difficult problems of cost allocation.

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APPENDIX A
EXCERPTS FROM THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, PUBLIC LAW 92-500

AREAWIDE WASTE TREATMENT MANAGEMENT

"SEC. 208(a) For the purpose of encouraging and facilitating the development and implementation of areawide waste treatment management plans--

"(1) The Administrator, within ninety days after the date of enactment of this Act and after consultation with appropriate Federal, State, and local authorities, shall by regulation publish guidelines for the identification of those areas which, as a result of urban-industrial concentrations or other factors, have substantial water quality control problems.

"(2) The Governor of each State, within sixty days after publication of the guidelines issued pursuant to paragraph (1) of this subsection, shall identify each area within the State which, as a result of urban-industrial concentrations or other factors, has substantial water quality control problems. Not later than one hundred and twenty days following such identification and after consultation with appropriate elected and other officials of local governments having jurisdiction in such areas, the Governor shall designate (A) the boundaries of each such area, and (B) a single representative organization, including elected officials from local governments or their designees, capable of developing effective areawide waste treatment management plans for such area. The Governor may in the same manner at any later time identify any additional area (or modify an existing area) for which he determines areawide waste treatment management to be appropriate, designate the boundaries of such area, and designate an organization capable of developing effective areawide waste treatment management plans for such area.

"(3) With respect to any area which, pursuant to the guidelines published under paragraph (1) of this subsection, is located in two or more States, the Governors of the respective State shall consult and cooperate in carrying out the provisions of paragraph (2), with a view toward designating the boundaries of the interstate area having common water quality control problems and for which areawide

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waste treatment management plans would be most effective, and toward designating, within one hundred and eighty days after publication of guidelines issued pursuant to paragraph (1) of this subsection, of a single representative organization capable of developing effective areawide waste treatment management plans for such areas.

"(4) If a Governor does not act, either by designating or determining not to make a designation under paragraph (2) of this subsection, within the time required by such paragraph, or if, in the case of an interstate area, the Governors of the States involved do not designate a planning organization within the time required by paragraph (3) of this subsection, the chief elected officials of local governments within an area may by agreement designate (A) the boundaries for such an area, and (B) a single representative organization including elected officials from such local governments, or their designees, capable of developing an areawide waste treatment management plan for such area.

"(5) Existing regional agencies may be designated under paragraphs (2), (3), and (4) of this subsection.

"(6) The State shall act as a planning agency for all portions of such State which are not designated under paragraphs (2), (3), or (4) of this subsection.

"(7) Designations under this subsection shall be subject to the approval of the Administrator.

"(b) (1) Not later than one year after the date of designation of any organization under subsection (a) of this section such organization shall have in operation a continuing areawide waste treatment management planning process consistent with section 201 of this Act.

> *"Sec. 201. (a) It is the purpose of this title to require and to assist the development and implementation of waste treatment management plans and practices which will achieve the goals of this Act.*
>
> *"(b) Waste treatment management plans and practices shall provide for the application of the best practicable waste treatment technology before any discharge into receiving waters, including reclaiming and recycling of water, and confined disposal of pollutants so they will not migrate to cause water or other environmental pollution and shall provide for consideration of advanced waste treatment techniques.*

"(c) To the extent practicable, waste treatment management shall be on an areawide basis and provide control or treatment of all point and nonpoint sources of pollution, including in place or accumulated pollution sources.

"(d) The Administrator shall encourage waste treatment management which results in the construction of revenue producing facilities providing for--

"(1) the recycling of potential sewage pollutants through the production of agriculture, silviculture, or aquaculture products, or any combination thereof;

"(2) the confined and contained disposal of pollutants not recycled;

"(3) the reclamation of wastewater; and

"(4) the ultimate disposal of sludge in a manner that will not result in environmental hazards.

"(e) The Administrator shall encourage waste treatment management which results in integrating facilities for sewage treatment and recycling with facilities to treat, dispose of, or utilize other industrial and municipal wastes, including but not limited to solid waste and waste heat and thermal discharges. Such integrated facilities shall be designed and operated to produce revenues in excess of capital and operation and maintenance costs and such revenues shall be used by the designated regional management agency to aid in financing other environmental improvement programs.

"(f) The Administrator shall encourage waste treatment management which combines 'open space' and recreational considerations with such management.

"(g)(1) The Administrator is authorized to make grants to any state, municipality, or intermunicipal or interstate agency for the construction of publicly owned treatment works.

"(2) The Administrator shall not make grants from funds authorized for any fiscal year beginning after June 30, 1974, to any State, municipality,

> *or intermunicipal or interstate agency for the erection, building, acquisition, alteration remodeling, improvement, or extension of treatment works unless the grant applicant has satisfactorily demonstrated to the Administrator that--*
>
> *"(A) alternative waste management techniques have been studied and evaluated and the works proposed for grant assistance will provide for the application of the best practicable waste treatment technology over the life of the works consistent with the purposes of this title; and*
>
> *"(B) as appropriate, the works proposed for grant assistance will take into account and allow to the extent practicable the application of technology at a later date which will provide for the reclaiming or recycling of water or otherwise eliminate the discharge of pollutants.*
>
> *"(3) The Administrator shall not approve any grant after July 1, 1973, for treatment works under this section unless the applicant shows to the satisfaction of the Administrator that each sewer collection system discharging into such treatment works is not subject to excessive infiltration.*
>
> *"(4) The Administrator is authorized to make grants to applicants for treatment works grants under this section for such sewer system evaluation studies as may be necessary to carry out the requirements of paragraph (3) of this subsection. Such grants shall be made in accordance with rules and regulations promulgated by the Administrator. Initial rules and regulations shall be promulgated under this paragraph not later than 120 days after the date of enactment of the Federal Water Pollution Control Act Amendments of 1972.*

Plans prepared in accordance with this process shall contain alternatives for waste treatment management, and be applicable to all wastes generated within the area involved. The initial plan prepared in accordance with such process shall be certified by the Governor and submitted to the Administrator not later than two years after the planning process is in operation.

"(2) Any plan prepared under such process shall include, but not be limited to--

"(A) the identification of treatment works[1] necessary to meet the anticipated municipal and industrial waste treatment needs of the area over a twenty-year period, annually updated (including an analysis of alternative waste treatment systems), including any requirements for the acquisition of land for treatment purposes; the necessary waste water collection and urban storm water runoff systems; and a program to provide the necessary financial arrangements for the development of such treatment works;

"(B) the establishment of construction priorities for such treatment works and time schedules for the initiation and completion of all treatment works;

"(C) the establishment of a regulatory program to--

"(i) implement the waste treatment management requirements of section 201(c)[2]

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[1] "Sec. 212(2)(A). The term 'treatment works' means any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature to implement section 201 of this Act, or necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, outfall equipment, and their appurtenances; extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and any works, including site acquisition of the land that will be an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment.
"(B) In addition to the definition contained in subparagraph (A) of this paragraph, 'treatment works' means any other method or system for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste, including storm water runoff, or industrial waste, including waste in combined storm water and sanitary sewer systems.

[2] Sec. 201(C). To the extent practicable, waste treatment management shall be on an areawide basis and provide control or treatment of all point and nonpoint sources of pollution, including in place or accumulated pollution sources.

"(ii) regulate the location, modification, and construction[3] of any facilities within such area which may result in any discharge in such area, and

"(iii) assure that any industrial or commercial wastes discharged into any treatment works in such area meet applicable pretreatment requirements;

"(D) the identification of those agencies necessary to construct[3], operate, and maintain all facilities required by the plan and otherwise to carry out the plan;

"(E) the identification of the measures necessary to carry out the plan (including financing), the period of time necessary to carry out the plan, the costs of carrying out the plan within such time, and the economic, social, and environmental impact of carrying out the plan within such time;

"(F) a process to (i) identify, if appropriate, agriculturally and silviculturally related nonpoint sources of pollution[4] including runoff from manure disposal areas, and from land used for livestock and crop production, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

3/ "Sec. 212(1). The term 'construction' means any one or more of the following; preliminary planning to determine the feasibility of treatment works, engineering, architectural, legal, fiscal, or economic investigations or studies, surveys, designs, plans, working drawings, specifications, procedures, or other necessary actions, erection, building, acquisition, alteration, remodeling, improvement, or extension of treatment works, or the inspection or supervision of any of the foregoing items.

4/ "Sec. 502(19). The term 'pollution' means the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.

"Sec. 502(6). The term 'pollutant' means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. This term does

"(G) a process to (i) identify, if appropriate, mine-related sources of pollution including new, current, and abandoned surface and underground mine runoff, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

"(H) a process to (i) identify construction activity related sources of pollution, and (ii) set forth procedures and methods including land use requirements) to control to the extent feasible such sources;

"(I) a process to (i) identify, if appropriate, salt water intrusion into rivers, lakes, and estuaries resulting from reduction of fresh water flow from any cause, including irrigation, obstruction, ground water extraction, and diversion, and (ii) set forth procedures and methods to control such intrusion to the extent feasible where such procedures and methods are otherwise a part of the waste treatment management plan;

"(J) a process to control the disposition of all residual waste generated in such area which could affect water quality; and

"(K) a process to control the disposal of pollutants on land or in subsurface excavations within such area to protect ground and surface water quality.

"(3) Areawide waste treatment management plans shall be certified annually by the Governor or his designee (or Governors or their designees, where more than one State is involved) as being consistent with applicable basin plans and such areawide waste treatment management plans shall be submitted to the Administrator for his approval.

not mean (A) 'sewage from vessels; within the meaning of section 312 of this Act; or (B) water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil or gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the State in which the well is located, and if such State determines that such injection or disposal will not result in the degradation of ground or surface water resources.

"(4) Whenever the Governor of any State determines (and notifies the Administrator) that consistency with a statewide regulatory program under section 303 so requires, the requirements of clauses (F) through (K) of paragraph (2) of this subsection shall be developed and submitted by the Governor to the Administrator for application to all regions within such State.

"(c)(1) The Governor of each State, in consultation with the planning agency designated under subsection (a) of this section, at the time a plan is submitted to the Administrator, shall designate one or more waste treatment management agencies (which may be an existing or newly created local, regional, or State agency or political subdivision) for each area designated under subsection (a) of this section and submit such designations to the Administrator.

"(2) The Administrator shall accept any such designation, unless, within 120 days of such designation, he finds that the designated management agency (or agencies) does not have adequate authority--

"(A) to carry out appropriate portions of an areawide waste treatment management plan developed under subsection (b) of this section;

"(B) to manage effectively waste treatment works and related facilities serving such area in conformance with any plan required by subsection (b) of this section;

"(C) directly or by contract, to design and construct new works, and to operate and maintain new and existing works as required by any plan developed pursuant to subsection (b) of this section;

"(D) to accept and utilize grants, or other funds from any source, for waste treatment management purposes;

"(E) to raise revenues, including the assessment of waste treatment charges;

"(F) to incur short-and long-term indebtedness;

"(G) to assure in implementation of an areawide waste treatment management plan that each participating community pays its proportionate share of treatment costs;

"(H) to refuse to receive any wastes from any municipality or subdivision thereof, which does not comply with any provisions of an approved plan under this section applicable to such area; and

"(I) to accept for treatment industrial wastes.

"(d) After a waste treatment management agency having the authority required by subsection (c) has been designated under such subsection for an area and a plan for such area has been approved under subsection (b) of this section, the Administrator shall not make any grant for construction of a publicly owned treatment works under section 201 (g)(1) within such area except to such designated agency and for works in conformity with such plan.

"(e) No permit under section 402[5/] of this Act shall be issued for any point source which is in conflict with a plan approved pursuant to subsection (b) of this section.

"(f)(1) The Administrator shall make grants to any agency designated under subsection (a) of this section for payment of the reasonable costs of developing and operating a continuing areawide waste treatment management planning process under subsection (b) of this section.

"(2) The amount granted to any agency under paragraph (1) of this subsection shall be 100 per centum of the costs of developing and operating a continuing areawide waste treatment management planning process under subsection (b) of this section for each of the fiscal years ending on June 30, 1974 and June 30, 1975, and shall not exceed 75 per centum of such costs in each succeeding fiscal year.

"(3) Each applicant for a grant under this subsection shall submit to the Administrator for his approval each proposal for which a grant is applied for under this subsection. The Administrator shall act upon such proposal as soon as practicable after it has been submitted, and his approval of that proposal shall be deemed a contractual obligation of the United States for the payment of its contribution to such proposal. There is authorized to be appropriated to carry out this subsection not to exceed $50,000,000 for the fiscal year ending June 30, 1973, not to exceed $100,000,000 for the fiscal year ending June 30, 1974, and not to exceed $150,000,000 for the fiscal year ending June 30, 1975.

"(g) The Administrator is authorized, upon request of the Governor or the designated planning agency, and without reimbursement, to consult with, and provide technical assistance to, any agency designated under subsection (a) of this section in the development of areawide waste treatment management plans under subsection (b) of this section.

[5/] National Pollutant Discharge Elimination System permit.

"(h)(1) The Secretary of the Army, acting through the Chief of Engineers, in cooperation with the Administrator is authorized and directed, upon request of the Governor or the designated planning organization, to consult with, and provide technical assistance to, any agency designated under subsection (a) of this section in developing and operating a continuing areawide waste treatment management planning process under subsection (b) of this section.

"(2) There is authorized to be appropriated to the Secretary of the Army, to carry out this subsection, not to exceed $50,000,000 per fiscal year for the fiscal years ending June 30, 1973 and June 30, 1974.

APPENDIX B

BIBLIOGRAPHY

The literature which specifically addresses the institutional and financial approaches to areawide waste treatment management planning is limited. As experience is gained in both planning and management, additional and more specific materials will doubtless become available. However, at the present, much of the literature provides either a broad treatment of the institutional and financial aspects of public works or water resources management or very specific and detailed analysis of a particular legal, economic, or other point.

This bibliography identifies some of the more useful publications which might warrent review by those engaged in areawide waste treatment management planning.

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